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## GOVERNOR'S STATEMENT

Governor's Statement



## **Governor's Statement\***

**Shaktikanta Das**

This is my twelfth statement since the onset of the pandemic. Of these, two statements were outside the Monetary Policy Committee (MPC) cycle – one in April 2020 at the outbreak of the COVID-19 crisis and the other in May 2021 at the peak of the second wave. Further, on two occasions – March and May 2020 – the MPC meeting had to be advanced to take pre-emptive action to safeguard the economy from the ravages of the pandemic. Over this period, the Reserve Bank has taken more than 100 measures to proactively and decisively respond to the unprecedented crisis. While doing so, we have not been a prisoner of any rulebook. We have not hesitated to take new and unconventional measures to keep the financial markets functioning and the market sentiments positive; provide liquidity to targeted sectors and institutions; and leverage on digital technologies to reach out to individuals and businesses. Thus, although the pandemic protocols do us part, technology ties us together.

In this backdrop, the MPC met on 6th, 7th and 8th October, 2021. Based on an assessment of the evolving macroeconomic and financial conditions and the outlook, the MPC voted unanimously to maintain status quo with regard to the policy repo rate and by a majority of 5 to 1 to retain the accommodative policy stance. Consequently, the policy repo rate remains unchanged at 4 per cent; and the stance remains accommodative as long as necessary to revive and sustain growth on a durable basis and continue to mitigate the impact of COVID-19 on the economy, while ensuring that inflation remains within the target going forward. The marginal standing facility (MSF) rate and the bank rate remain unchanged at 4.25 per cent. The reverse repo rate also remains unchanged at 3.35 per cent.

With the worst of the second wave behind us and substantial pick-up in COVID-19 vaccination giving greater confidence to open up and normalise economic activity, the recovery of the Indian economy is gaining traction. While vaccine reach is the real fault line in the current global recovery, India is in a much better place today than at the time of the last MPC meeting. Growth impulses seem to be strengthening and we derive comfort from the fact that the inflation trajectory is turning out to be more favourable than anticipated. In spite of global headwinds, we hope to emerge from the storm and sail towards normal times, steered by the underlying resilience of the macroeconomic fundamentals of the Indian economy.

Let me now give a brief overview of the MPC's rationale for the pause on the policy rate and the accommodative stance. The MPC noted that economic activity over the past two months has broadly evolved in consonance with the MPC's August assessment and outlook; and CPI inflation during July-August has turned out to be lower than anticipated. The actual outturn of real GDP growth in Q1:2021-22 at 20.1 per cent was close to, *albeit* a little below the MPC's forecast of 21.4 per cent. High-frequency indicators for Q2:2021-22 suggest that economic recovery has gained momentum, supported by ebbing of infections, the robust pace of vaccination, expected record kharif foodgrains production, government's focus on capital expenditure, benign monetary and financial conditions, and buoyant external demand.

Consumer price inflation softened during July-August, moving back into the tolerance band with an easing of food inflation, corroborating the MPC's assessment of the spike in inflation in May as transitory. Improvement in monsoon in September, the expected higher kharif production, adequate buffer stock of foodgrains and lower seasonal pickup in vegetable prices are likely to keep food price pressures muted. Core inflation, however, remains sticky. Elevated global crude oil and other commodity

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\* Governor's Statement - October 8, 2021

prices, combined with acute shortage of key industrial components and high logistics costs, are adding to input cost pressures. Pass-through to output prices has, however, been restrained by weak demand conditions. The evolving situation requires close vigilance.

Overall, aggregate demand is improving but slack still remains; output is still below pre-pandemic level and the recovery remains uneven and dependent upon continued policy support. Contact intensive services, which contribute about 40 per cent of economic activity in India, are still lagging. Supply side and cost push pressures are impinging upon inflation and these are expected to ameliorate with the ongoing normalisation of supply chains. Efforts to contain cost-push pressures through a calibrated reversal of the indirect taxes on fuel could contribute to a more sustained lowering of inflation and an anchoring of inflation expectations. Against this backdrop, the MPC decided to retain the prevailing repo rate at 4 per cent and continue with the accommodative stance, as stated in the last MPC statement.

### **Assessment of Growth and Inflation**

#### **Growth**

According to the release of National Statistical Office on August 31, real GDP growth for Q1:2021-22 at 20.1 per cent exhibited resilience of the economy in the face of the destructive second wave of COVID-19. Almost all components of GDP registered y-o-y growth, despite a sharp loss of momentum due to the second wave.

Recovery in aggregate demand gathered pace in August-September. This is reflected in high-frequency indicators – railway freight traffic; port cargo; cement production; electricity demand; e-way bills; GST and toll collections. The ebbing of infections, together with improving consumer confidence, has been supporting private consumption. The pent-up demand and the festival season should give further fillip to

urban demand in the second half of the financial year. Rural demand is expected to get impetus from continued resilience of the agricultural sector and record production of kharif foodgrains in 2021-22 as per the first advance estimates. The improved level in reservoirs and early announcement of the minimum support prices for rabi crops boost the prospects for rabi production. The support to aggregate demand from government consumption is also gathering pace.

Improvement in government capex, together with congenial financial conditions, could bring about an upturn in the much-awaited virtuous investment cycle. Pick up in import of capital goods and cement production point towards some revival in investment activity. According to our survey results, capacity utilisation (CU) in the manufacturing sector, which declined sharply in Q1:2021-22 under the second wave, is assessed to have recovered in Q2 and further improvement is expected in the ensuing quarters.

Critical support to aggregate demand also came from exports, which remained in excess of US\$ 30 billion for the seventh consecutive month in September 2021 reflecting strong global demand and policy support. This augurs well for meeting our export target of US\$ 400 billion during 2021-22.

Recovery in the services sector is also gaining traction. Gradual pickup in contact-intensive services, together with strong performance of technology driven sectors, are likely to support the momentum.

Impact of elevated input costs on profit margins, potential global financial and commodity markets volatility and a resurgence in COVID-19 infections, however, impart downside risks to the growth outlook. Taking all these factors into consideration, the projection for real GDP growth is retained at 9.5 per cent in 2021-22 consisting of 7.9 per cent in Q2; 6.8 per cent in Q3; and 6.1 per cent in Q4 of 2021-22. Real GDP growth for Q1:2022-23 is projected at 17.2 per cent.

## Inflation

Headline CPI inflation at 5.3 per cent in August registered a moderation for the second consecutive month and a decline of one percentage point from its level in June 2021. The key driver of the disinflation has been the moderation in food inflation even as fuel inflation edged up and CPI inflation excluding food and fuel inflation (core inflation) remained elevated. Headline inflation continues to be significantly influenced by very high inflation in select items such as edible oils, petrol and diesel, LPG and medicines. On the other hand, a very low seasonal build-up in vegetable prices, declining cereal prices, a sharp deflation in gold prices and muted housing inflation have helped to contain inflationary pressures.

Going forward, several evolving factors provide comfort on the food price front. Its momentum is expected to remain muted in the near term. Cereal prices are expected to remain soft due to likely record kharif foodgrains production and adequate buffer stocks. Vegetable prices, a major source of inflation volatility, have remained contained in the year so far with record production and supply side measures by the Government. Unseasonal rains and adverse weather-related events – if any, in the coming months – are, however, upside risks to vegetable prices. Supply side measure by the Government for edible oils and pulses are helping to temper price pressures; however, an uptick in prices of edible oils is seen in the recent period.

Overall, the CPI headline momentum is moderating which, combined with favourable base effects in the coming months, could bring about a substantial softening in inflation in the near-term. Taking into consideration all these factors, CPI inflation is projected at 5.3 per cent for 2021-22; 5.1 per cent in Q2, 4.5 per cent in Q3; 5.8 per cent in Q4 of 2021-22, with risks broadly balanced. CPI inflation for Q1:2022-23 is projected at 5.2 per cent. We are watchful of the

evolving inflation situation and remain committed to bring it closer to the target in a gradual and non-disruptive manner.

## Liquidity and Financial Market Conditions

At the current juncture, central banks across the world find themselves at crossroads. Diverging monetary policy stances are not being dictated by country groupings but by country circumstances. Among EMEs, some are tightening monetary policy, others are undertaking further monetary stimulus, while a few are on a resolute pause. The countries that are tightening monetary policy are those which are facing inflation much above their upper tolerance bands and are also registering a strong rebound in growth above pre-pandemic levels, boosted mainly by commodity export earnings and positive spillovers from improvement in macroeconomic conditions in some advanced economies. Countries that are easing monetary policy through non-rate actions are the rare few which have low consumer price inflation. And finally, countries which are on a resolute pause have inflation in the elevated zone but poor growth prospects or nascent recoveries that need nurturing. In India, the MPC has maintained a pause and given time and state contingent forward guidance from time to time on maintaining accommodation. The conduct of monetary policy in India will continue to be oriented to our domestic circumstances and our assessment.

Since the onset of the pandemic, the Reserve Bank has maintained ample surplus liquidity to support a speedy and durable economic recovery. The level of surplus liquidity in the banking system increased further during September 2021, with absorption under fixed rate reverse repo, variable rate reverse repo (VRRR) of 14 days and fine-tuning operations under the liquidity adjustment facility (LAF) averaging ₹9.0 lakh crore per day as against ₹7.0 lakh crore during June to August 2021. The surplus liquidity rose even

further to a daily average of ₹9.5 lakh crore in October so far (up to October 6). The potential liquidity overhang amounts to more than ₹13.0 lakh crore.

As the economy shows signs of emerging from the COVID-19 inflicted ravages, a near consensus view emerging among market participants and policy makers is that the liquidity conditions emanating from the exceptional measures instituted during the crisis would need to evolve in sync with the macroeconomic developments to preserve financial stability. This process has to be gradual, calibrated and non-disruptive, while remaining supportive of the economic recovery.

The Reserve Bank's secondary market G-Sec Acquisition Programme (G-SAP) has been successful in addressing market concerns and anchoring yield expectations in the context of the large borrowing programme of the Government. Coupled with other liquidity measures, it facilitated congenial and orderly financing conditions and a conducive environment for the recovery. The total liquidity injected into the system during the first six months of the current financial year through open market operations (OMOs), including G-SAP, was ₹2.37 lakh crore, as against an injection of ₹3.1 lakh crore over the full financial year 2020-21. Given the existing liquidity overhang, the absence of a need for additional borrowing for GST compensation and the expected expansion of liquidity in the system as Government spending increases in line with budget estimates, the need for undertaking further G-SAP operations at this juncture does not arise. The Reserve Bank, however, would remain in readiness to undertake G-SAP as and when warranted by liquidity conditions and also continue to flexibly conduct other liquidity management operations including Operation Twist (OT) and regular open market operations (OMOs).

With the resumption of normal liquidity operations since mid-January 2021, 14-day variable rate

reverse repo (VRRR) auctions have been deployed as the main instrument under the liquidity management framework. Market appetite for VRRRs has been enthusiastic. Moreover, the higher remuneration which VRRR offers *vis-à-vis* the fixed rate reverse repo is also rendering the former relatively attractive. Keeping in view the market feedback, it is proposed to undertake the 14-day VRRR auctions on a fortnightly basis in the following manner: ₹4.0 lakh crore today as already notified; ₹4.5 lakh crore on October 22; ₹5.0 lakh crore on November 3; ₹5.5 lakh crore on November 18; and ₹6.0 lakh crore on December 3. Further, depending upon the evolving liquidity conditions – especially the quantum of capital flows, pace of government expenditure and credit offtake – the RBI may also consider complementing the 14-day VRRR auctions with 28-day VRRR auctions in a similar calibrated fashion. The RBI also retains the flexibility to conduct fine-tuning operations of varying amounts as and when required. Even with all these operations, the liquidity absorbed under the fixed rate reverse repo would still be around ₹2 to 3 lakh crore in the first week of December 2021.

Let me reiterate and reemphasise that the VRRR auctions are primarily a tool for rebalancing liquidity as part of our liquidity management operations and should not be interpreted as a reversal of the accommodative policy stance. The RBI will ensure that there is adequate liquidity to support the process of economic recovery. The Reserve Bank will continue to support the market in ensuring an orderly completion of the borrowing programme of the Government. Further, our focus on orderly evolution of the yield curve as a public good also continues.

#### **Additional Measures**

Against this backdrop and based on our continuing assessment of the macroeconomic situation and financial market conditions, certain additional measures are also being announced today. The details

of these measures are set out in the statement on developmental and regulatory policies (Part-B) of the Monetary Policy Statement. The additional measures are as follows.

#### **On Tap Special Long-Term Repo Operations (SLTRO) for Small Finance Banks (SFBs)**

A special three-year long-term repo operation (SLTRO) of ₹10,000 crore at the repo rate was introduced for Small Finance Banks (SFBs) in May 2021. This facility is currently available till October 31, 2021. Recognising the need for continued support to small business units, micro and small industries, and other unorganised sector entities, it has been decided to extend this facility till December 31, 2021 and make it available On Tap.

#### **Introduction of Retail Digital Payment Solutions in Offline Mode**

A scheme to test technologies that enable digital payments even in remote places where internet connectivity is either absent or barely available was announced in August 2020. Given the encouraging experience gained from the pilot tests, it is proposed to introduce a framework for retail digital payments in offline mode across the country. This will further expand the reach of digital payments and open up new opportunities for individuals and businesses.

#### **Enhancing Transaction Limit in IMPS to ₹5 lakh**

Immediate Payment Service (IMPS) offers instant domestic funds transfer facility 24x7 through various channels. In view of the importance of the IMPS system and for enhanced consumer convenience, it is proposed to increase the per-transaction limit from ₹2 lakh to ₹5 lakh.

#### **Geo-Tagging of Payment System Touch Points**

Ensuring wider availability of payments acceptance (PA) infrastructure throughout the country has been one of the priority areas for financial inclusion. To target

areas with deficient PA infrastructure, it is proposed to introduce a framework for leveraging geo-tagging technology for capturing exact location information on all existing and new PA infrastructure *viz.*, Point of Sale (PoS) terminals, Quick Response (QR) Codes, etc. This would complement the Payment Infrastructure Development Fund (PIDF) framework of the Reserve Bank in ensuring wider geographical deployment of PA infrastructure.

#### **Regulatory Sandbox – Announcement of the Theme for a New Cohort and On Tap Application for Earlier Themes**

The Reserve Bank's Regulatory Sandbox (RS) has so far introduced three cohorts on 'Retail Payments'; 'Cross Border Payments'; and 'MSME Lending'. With a view to provide further impetus to the fintech eco-system, a fourth cohort on 'Prevention and Mitigation of financial frauds' is being announced. In addition, based on the experience gained and the feedback received from stakeholders, it is proposed to facilitate 'On Tap' application for earlier themes for participating in the Regulatory Sandbox. This measure is expected to ensure continuous innovation in the fintech ecosystem of our country.

#### **Review of Ways and Means Advances (WMA) Limits and Relaxation in Overdraft (OD) Facility for the State Governments / UTs**

To help States/UTs to manage their cash flows amidst continued uncertainties on account of the pandemic, it has been decided to continue with the interim enhanced WMA limits of ₹51,560 crore for States/UTs for a further period of six months up to March 31, 2022. It has also been decided to continue with the liberalised measures, *viz.*, enhancement of maximum number of days of overdraft (OD) in a quarter from 36 to 50 days and the number of consecutive days of OD from 14 to 21 days, up to March 31, 2022.

### **Priority Sector Lending - Permitting Banks to On-lend through NBFCs - Continuation of Facility**

Considering the increased traction observed in delivery of credit by NBFCs to the underserved/unerved segments of the economy, bank lending to registered NBFCs (other than MFIs) for on-lending to Agriculture, MSME and Housing was permitted to be classified as Priority Sector lending (PSL). This facility, which was available from August 13, 2019 till September 30, 2021 is being further extended for another six months up to March 31, 2022.

### **Internal Ombudsman for NBFCs**

The increased strength and reach of NBFCs across the country has necessitated various measures by the Reserve Bank for protection of customers of NBFCs. With a view to further strengthening the internal

grievance redress mechanism of NBFCs, it has been decided to introduce the Internal Ombudsman Scheme (IOS) for certain categories of NBFCs having higher customer interface.

### **Concluding Remarks**

If there is anything that the most trying and difficult past eighteen months have taught us, it is to never doubt the indomitable human spirit which always rises to face mighty challenges. With our resilience and resolute commitment, we have learnt to adapt, innovate and turn challenges into opportunities. As we further accelerate the pace of economic recovery, it is important not to rest in the glory of what has been achieved but work tirelessly on what remains to be done. As Mahatma Gandhi, whose birth anniversary we celebrated last week, had said: "to lose patience is to lose the battle"<sup>1</sup>.

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<sup>1</sup> Source: Book "Mahatma" by D.G. Tendulkar Volume 2 – Mahatma Gandhi

# MONETARY POLICY STATEMENT FOR 2021-22

Monetary Policy Statement, 2021-22 Resolution of the  
Monetary Policy Committee (MPC) October 2021



# ***Monetary Policy Statement, 2021-22 Resolution of the Monetary Policy Committee (MPC) \****

On the basis of an assessment of the current and evolving macroeconomic situation, the Monetary Policy Committee (MPC) at its meeting today (October 8, 2021) decided to:

- keep the policy repo rate under the liquidity adjustment facility (LAF) unchanged at 4.0 per cent.

The reverse repo rate under the LAF remains unchanged at 3.35 per cent and the marginal standing facility (MSF) rate and the Bank Rate at 4.25 per cent.

- The MPC also decided to continue with the accommodative stance as long as necessary to revive and sustain growth on a durable basis and continue to mitigate the impact of COVID-19 on the economy, while ensuring that inflation remains within the target going forward.

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.

The main considerations underlying the decision are set out in the statement below.

## **Assessment**

### **Global Economy**

2. Since the MPC's meeting during August 4-6, 2021, the momentum of the global recovery has ebbed across geographies with the rapid spread of the delta

variant of COVID-19, including in some countries with relatively high vaccination rates. After sliding to a seven-month low in August, the global purchasing managers' index (PMI) rose marginally in September. World merchandise trade volumes remained resilient in Q2:2021, but more recently there has been a loss of momentum with the persistence of supply and logistics bottlenecks.

3. Commodity prices remain elevated, and consequently, inflationary pressures have accentuated in most advanced economies (AEs) and emerging market economies (EMEs), prompting monetary tightening by a few central banks in the former group and several in the latter. Change in monetary policy stances, in conjunction with a likely tapering of bond purchases in major advanced economies later this year, is beginning to strain the international financial markets with a sharp rise in bond yields in major AEs and EMEs after remaining range-bound in August. The US dollar has strengthened sharply, while the EME currencies have weakened since early-September with capital outflows in recent weeks.

### **Domestic Economy**

4. On the domestic front, real gross domestic product (GDP) expanded by 20.1 per cent year-on-year (y-o-y) during Q1:2021-22 on a large favourable base; however, its momentum was dragged down by the second wave of the pandemic. The level of real GDP in Q1:2021-22 was 9.2 per cent below its pre-pandemic level two years ago. On the demand side, almost all the constituents of GDP posted robust y-o-y growth. On the supply side, real gross value added (GVA) increased by 18.8 per cent y-o-y during Q1:2021-22.

5. The rebound in economic activity gained traction in August-September, facilitated by the ebbing of infections, easing of restrictions and a sharp pick-up in the pace of vaccination. The south-west monsoon, after a lull in August, picked up in September, narrowing the deficit in the cumulative seasonal

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\* Released on October 8, 2021.

rainfall to 0.7 per cent below the long period average and kharif sowing exceeded the previous year's level. Record kharif foodgrains production of 150.5 million tonnes as per the first advance estimates augurs well for the overall agricultural sector. By end-September, reservoir levels at 80 per cent of the full reservoir level were above the decadal average, which is expected to boost rabi production prospects.

6. After a prolonged slowdown, industrial production posted a high y-o-y growth for the fifth consecutive month in July. The manufacturing PMI at 53.7 in September remained in positive territory. Services activity gained ground with support from the pent-up demand for contact-intensive activities. The services PMI continued in expansion zone in September at 55.2, although some sub-components moderated. High-frequency indicators for August-September – railway freight traffic; cement production; electricity demand; port cargo; e-way bills; GST and toll collections – suggest progress in the normalisation of economic activity relative to pre-pandemic levels; however, indicators such as domestic air traffic, two-wheeler sales and steel consumption continue to lag. Non-oil export growth remained strong on buoyant external demand.

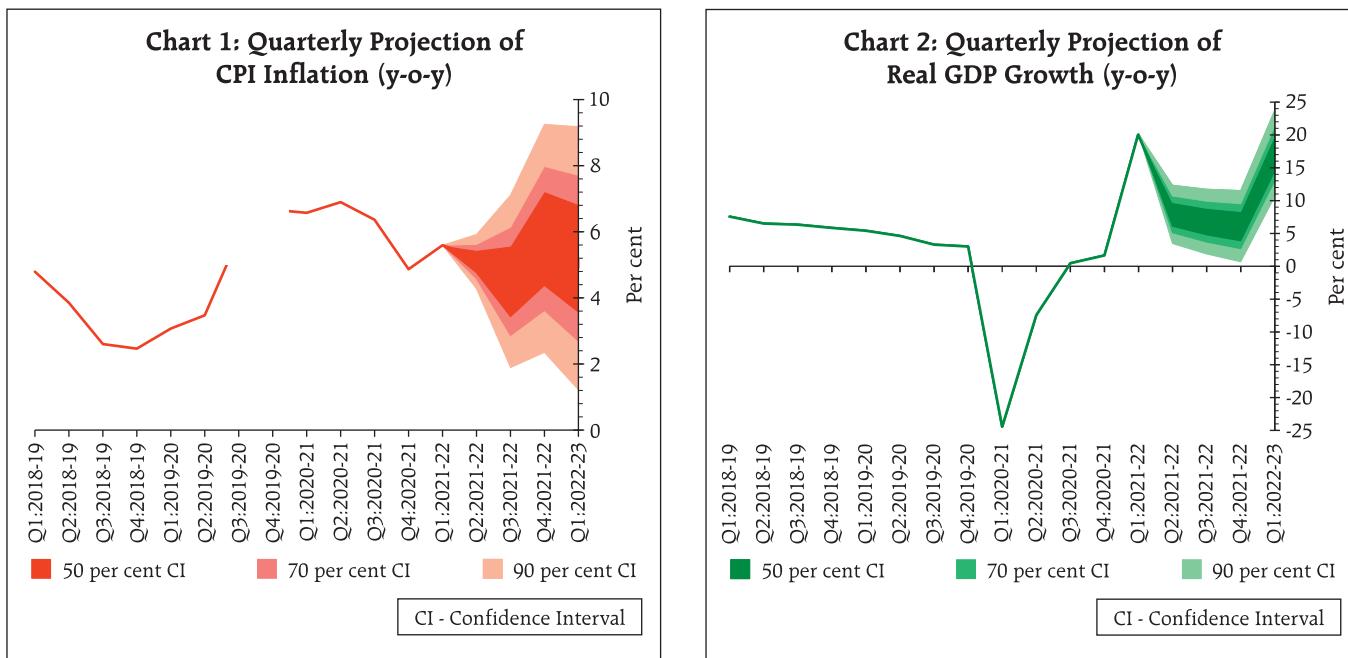
7. Headline CPI inflation at 5.3 per cent in August softened for the second consecutive month, declining by one percentage point from the recent peak in May-June 2021. This was primarily driven by an easing in food inflation. Fuel inflation edged up to a new high in August. Core inflation, i.e. inflation excluding food and fuel, remained elevated and sticky at 5.8 per cent in July-August 2021.

8. System liquidity remained in large surplus in August-September, with daily absorptions rising from an average of ₹7.7 lakh crore in July-August to ₹9.0 lakh crore during September and ₹9.5 lakh crore during October (up to October 6) through the fixed rate reverse repo, the 14-day variable rate reverse repo

(VRRR) and fine-tuning operations under the liquidity adjustment facility (LAF). Auctions of ₹1.2 lakh crore under the secondary market government securities acquisition programme (G-SAP 2.0) during Q2:2021-22 provided liquidity across the term structure. As on October 1, 2021, reserve money (adjusted for the first-round impact of the change in the cash reserve ratio) expanded by 8.3 per cent (y-o-y); money supply (M3) and bank credit grew by 9.3 per cent and 6.7 per cent, respectively, as on September 24, 2021. India's foreign exchange reserves increased by US\$ 60.5 billion in 2021-22 (up to October 1) to US\$ 637.5 billion, partly reflecting the allocation of special drawing rights (SDRs), and were close to 14 months of projected imports for 2021-22.

### **Outlook**

9. Going forward, the inflation trajectory is set to edge down during Q3:2021-22, drawing comfort from the recent catch-up in kharif sowing and likely record production. Along with adequate buffer stock of foodgrains, these factors should help to keep cereal prices range bound. Vegetable prices, a major source of inflation volatility, have remained contained in the year so far and are likely to remain soft, assuming no disruption due to unseasonal rains. Supply side interventions by the Government in the case of pulses and edible oils are helping to bridge the demand-supply gap; the situation is expected to improve with kharif harvest arrivals. The resurgence of edible oils prices in the recent period, however, is a cause of concern. On the other hand, pressures persist from crude oil prices which remain volatile over uncertainties on the global supply and demand conditions. Domestic pump prices remain at very high levels. Rising metals and energy prices, acute shortage of key industrial components and high logistics costs are adding to input cost pressures. Weak demand conditions, however, are tempering the pass-through to output prices. The CPI headline momentum is moderating with the easing of food prices which, combined with favourable base



effects, could bring about a substantial softening in inflation in the near-term. Taking into consideration all these factors, CPI inflation is projected at 5.3 per cent for 2021-22; 5.1 per cent in Q2, 4.5 per cent in Q3; 5.8 per cent in Q4 of 2021-22, with risks broadly balanced. CPI inflation for Q1:2022-23 is projected at 5.2 per cent (Chart 1).

10. Domestic economic activity is gaining traction with the ebbing of the second wave. Going forward, rural demand is likely to maintain its buoyancy, given the above normal kharif sowing while rabi prospects are bright. The substantial acceleration in the pace of vaccination, the sustained lowering of new infections and the coming festival season should support a rebound in the pent-up demand for contact intensive services, strengthen the demand for non-contact intensive services, and bolster urban demand. Monetary and financial conditions remain easy and supportive of growth. Capacity utilisation is improving, while the business outlook and consumer confidence are reviving. The broad-based reforms by the government focusing on infrastructure development, asset monetisation, taxation, telecom

sector and banking sector should boost investor confidence, enhance capacity expansion and facilitate crowding in of private investment. The production-linked incentive (PLI) scheme augurs well for domestic manufacturing and exports. Global semiconductor shortages, elevated commodity prices and input costs, and potential global financial market volatility are key downside risks to domestic growth prospects, along with uncertainty around the future COVID-19 trajectory. Taking all these factors into consideration, projection for real GDP growth is retained at 9.5 per cent in 2021-22 consisting of 7.9 per cent in Q2; 6.8 per cent in Q3; and 6.1 per cent in Q4 of 2021-22. Real GDP growth for Q1:2022-23 is projected at 17.2 per cent (Chart 2).

11. Inflation prints in July-August were lower than anticipated. With core inflation persisting at an elevated level, measures to further ameliorate supply side and cost pressures, including through calibrated cuts in indirect taxes on petrol and diesel by both Centre and States, would contribute to a more durable reduction in inflation and anchoring of inflation expectations. The outlook for aggregate demand is progressively

improving but the slack is large: output is still below pre-COVID level and the recovery is uneven and critically dependent upon policy support. Compared to pre-pandemic levels, contact intensive services, which contribute around two-fifth of economic activity in India, still lag considerably. Capacity utilisation in the manufacturing sector is below its pre-pandemic levels and an early recovery to its long-run average is critical for a sustained rebound in investment demand. Even as the domestic economy is showing signs of mending, the external environment is turning more uncertain and challenging, with headwinds from slowing growth in some major Asian and advanced economies, steep jump in natural gas prices in the recent weeks and concerns emanating from normalisation of monetary policy in some major advanced economies. Against this backdrop, the ongoing domestic recovery needs to be nurtured assiduously through all policy channels. The MPC will remain watchful given the uncertainties surrounding the outlook for growth and inflation. Accordingly, keeping in mind the evolving situation, the MPC decided to keep the policy repo rate unchanged at 4 per cent and continue with an accommodative stance as long as necessary to revive

and sustain growth on a durable basis and continue to mitigate the impact of COVID-19 on the economy, while ensuring that inflation remains within the target going forward.

12. All members of the MPC – Dr. Shashanka Bhide, Dr. Ashima Goyal, Prof. Jayanth R. Varma, Dr. Mridul K. Saggar, Dr. Michael Debabrata Patra and Shri Shaktikanta Das – unanimously voted to keep the policy repo rate unchanged at 4.0 per cent.
13. All members, namely, Dr. Shashanka Bhide, Dr. Ashima Goyal, Dr. Mridul K. Saggar, Dr. Michael Debabrata Patra and Shri Shaktikanta Das, except Prof. Jayanth R. Varma, voted to continue with the accommodative stance as long as necessary to revive and sustain growth on a durable basis and continue to mitigate the impact of COVID-19 on the economy, while ensuring that inflation remains within the target going forward. Prof. Jayanth R. Varma expressed reservations on this part of the resolution.
14. The minutes of the MPC's meeting will be published on October 22, 2021.
15. The next meeting of the MPC is scheduled during December 6 to 8, 2021.

## **STATEMENT ON DEVELOPMENTAL AND REGULATORY POLICIES**

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) liquidity measures; (ii) payment and settlement systems; (iii) debt management; and (iv) financial Inclusion and customer protection.

### **I. Liquidity Measures**

#### **1. On Tap Special Long-Term Repo Operations (SLTRO) for Small Finance Banks (SFBs)**

Small Finance Banks (SFBs) have been playing a prominent role in providing last mile credit to individuals and small businesses. A three-year special long-term repo operations (SLTRO) facility of ₹10,000 crore at the repo rate was made available to them in May 2021 to be deployed for fresh lending of up to ₹10 lakh per borrower. This facility was made available till October 31, 2021. Recognising the persisting uneven impact of the pandemic on small business units, micro and small industries, and other unorganised sector entities, it has been decided to extend this facility till December 31, 2021. Further, this will now be available on tap to ensure extended support to these entities.

### **II. Payment and Settlement Systems**

#### **2. Introduction of Digital Payment Solutions in Offline Mode**

The Statement on Developmental and Regulatory Policies dated August 06, 2020 had announced a scheme to conduct pilot tests of innovative technology that enables retail digital payments even in situations where internet connectivity is low / not available (offline mode). Three pilots were successfully conducted under the Scheme in different parts of the country during the period from September 2020 to June 2021 involving small-value transactions covering a volume of 2.41 lakh for value ₹1.16 crore. The

learnings indicate that there is a scope to introduce such solutions, especially in remote areas. Given the experience gained from the pilots and the encouraging feedback, it is proposed to introduce a framework for carrying out retail digital payments in offline mode across the country. Detailed guidelines will be issued in due course.

#### **3. Enhancing Transaction Limit in IMPS to ₹5 lakh**

Immediate Payment Service (IMPS) of National Payments Corporation of India (NPCI) is an important payment system providing 24x7 instant domestic funds transfer facility and is accessible through various channels like internet banking, mobile banking apps, bank branches, ATMs, SMS and IVRS. The per-transaction limit in IMPS, effective from January 2014, is currently capped at ₹2 lakh for channels other than SMS and IVRS. The per-transaction limit for SMS and IVRS channels is ₹5000. With RTGS now operational round the clock, there has been a corresponding increase in settlement cycles of IMPS, thereby reducing the credit and settlement risks. In view of the importance of the IMPS system in processing of domestic payment transactions, it is proposed to increase the per-transaction limit from ₹2 lakh to ₹5 lakh for channels other than SMS and IVRS. This will lead to further increase in digital payments and will provide an additional facility to customers for making digital payments beyond ₹2 lakh. Necessary instructions in this regard would be issued separately.

#### **4. Geo-tagging of Payment System Touch Points**

Deepening digital payments penetration across the country is a priority area for financial inclusion. The setting up of Payments Infrastructure Development Fund (PIDF) to encourage deployment of acceptance infrastructure and create additional touch points is a step in this direction. To ensure a balanced spread of acceptance infrastructure across the length and breadth of the country, it is essential to ascertain location information of existing payment

acceptance infrastructure. In this regard, geo-tagging technology, by providing location information on an ongoing basis, can be useful in targeting areas with deficient infrastructure for focussed policy action. Accordingly, it is proposed to lay down a framework for geo-tagging (capturing geographical coordinates –, viz., latitude and longitude) of physical payment acceptance infrastructure, viz., Point of Sale (PoS) terminals, Quick Response (QR) codes, etc., used by merchants. This would complement the PIDF framework by better deployment of acceptance infrastructure and wider access to digital payments. Necessary instructions will be issued separately.

#### **5. Regulatory Sandbox – Announcement of the Theme for a New Cohort and On Tap Application for Earlier Themes**

The Reserve Bank's Regulatory Sandbox (RS) has so far introduced three cohorts. Six entities have successfully exited the First Cohort on 'Retail Payments' while under the Second Cohort on 'Cross Border Payments' eight entities are undertaking Tests. The application window for the Third Cohort of 'MSME Lending' is currently open.

With a view to preparing the fintech eco-system, it is proposed that the topic for the Fourth Cohort would be 'Prevention and Mitigation of Financial Frauds'. The focus would be on using technology to reduce the lag between the occurrence and detection of frauds, strengthening the fraud governance structure and minimising response time to frauds. The application window for this cohort would be opened in due course.

In addition, based on the experience gained and the feedback received from stakeholders, it is proposed to facilitate 'On Tap' application for themes of cohorts earlier closed. This measure is expected to ensure continuous innovation and engagement with industry to enable a proactive response to the rapidly evolving FinTech scenario. The modified framework

will be released today.

#### **III. Debt Management**

##### **6. Review of Ways and Means Advances (WMA) Limits and Relaxation in Overdraft (OD) Facility for the State Governments/UTs**

As recommended by the Advisory Committee (Chairman: Shri Sudhir Shrivastava) to review the Ways and Means Advances (WMA) limits for State Governments/UTs, the enhanced interim WMA limits totalling ₹51,560 crore were extended by the Reserve Bank up to September 30, 2021 to help States/UTs to tide over the difficulties faced by them during the pandemic. Considering the uncertainties related to the ongoing pandemic, it has been decided to continue with the enhanced WMA limits up to March 31, 2022.

It has also been decided to continue with the liberalized measures introduced to deal with the pandemic, viz., enhancement of maximum number of days of OD in a quarter from 36 to 50 days and the number of consecutive days of OD from 14 to 21 days, up to March 31, 2022. The above measures are expected to help States/UTs to manage their cash flows better. The details in this regard will be issued separately.

#### **IV. Financial Inclusion and Customer Protection**

##### **7. Priority Sector Lending - Permitting Banks to On-lend through NBFCs - Continuation of Facility**

With a view to increase the credit flow to certain priority sectors of the economy which contribute significantly to growth and employment, and recognizing the role played by NBFCs in providing credit to these sectors, bank lending to registered NBFCs (other than MFIs) for on lending to Agriculture (investment credit), Micro and Small enterprises and housing (with an increased limit) was permitted to be classified as priority sector lending up to certain limits in August 2019, which was last extended on April 07, 2021 and was valid up to September 30, 2021.

Considering the increased traction observed in delivering credit to the underserved/unserved segments of the economy, it has been decided to extend this facility till March 31, 2022. A circular in this regard will be issued shortly.

#### **8. Internal Ombudsman for NBFCs**

Non-Banking Financial Companies (NBFCs) have played an important role in extending finance to niche sectors such as MSME, microfinance, housing, vehicle finance and have effectively complemented the efforts of banks through last mile financial intermediation. Several NBFCs have also successfully adopted digital modes to support the delivery of their financial products and services to a wide spectrum of customers.

The increased significance, strength and reach of NBFCs across the country has necessitated having in place better customer experience including grievance

redress practices. Over the last few years, RBI has initiated various measures for consumer protection and grievance redress for customers of NBFCs, which include requiring NBFCs to appoint Nodal Officers for grievance redress (2013) and the launch of the Ombudsman Scheme for NBFCs (2018).

With a view to further strengthen the internal grievance redress mechanism of NBFCs, it has been decided to introduce the Internal Ombudsman Scheme (IOS) for certain categories of NBFCs which have higher customer interface. The IOS for NBFCs, which will be on the lines of IOS for banks and non-bank payment system participants, will require select NBFCs to appoint an Internal Ombudsman (IO) at the top of their internal grievance redress mechanism to examine customer complaints which are in the nature of deficiency in service and are partly or wholly rejected by the NBFCs. Detailed instructions in this regard will be issued separately.



# MONETARY POLICY REPORT FOR 2021-22

Monetary Policy Report - October 2021



## I. Macroeconomic Outlook

*Domestic economic activity is normalising after the ferocious second wave retarded momentum. The outlook remains overcast by the future path of the pandemic; the accelerated pace of vaccination and release of pent-up demand provide an upside to the baseline growth path. Headline inflation has fallen back into the tolerance band and the trajectory is expected to be driven by supply-side factors. A faster resolution of supply chain disruptions, good foodgrains production and effective supply management could cause inflation to undershoot the baseline, contingent on the evolution of the pandemic and the efficacy of vaccines.*

In the months following the retention of the inflation target at 4 per cent with a +/- 2 per cent tolerance band around it for the period 2021-26 by the Government of India (GoI) on March 31, 2021, the monetary policy framework faced a testing challenge from a shock price spike in May 2021. In addition to pandemic-induced disruptions that shaped the trajectory of inflation during the first wave, spillovers from the hardening of commodity prices, especially of crude and edible oil, propelled headline inflation above the upper tolerance band. The episode was short-lived though and inflation has fallen back into the tolerance band. The monetary policy committee (MPC) decided to look through this shock, reading it as supply-driven and transitory. In its meetings in June and August, the MPC maintained *status quo* on the policy rate and committed to remain accommodative as long as it takes to revive and sustain growth and mitigate the impact of the pandemic on the economy. Developments in the real economy in the first half of 2021-22 have vindicated this stance – shorn of statistical base effects, aggregate demand trails below pre-pandemic levels and considerable slack still prevails in the economy, especially in contact-dependent sectors that faced

the brunt of the pandemic. In the second quarter of 2021-22, however, a hesitant recovery is underway, nurtured by the appreciable decline in infections, the stepping up of the scale and speed of vaccinations, and the congenial financial conditions engendered by monetary policy.

### I.1 Key Developments since the April 2021 MPR

Since the release of the April 2021 Monetary Policy Report (MPR), the global macroeconomic environment has been unsettled by diverging paths of economies across the world, between advanced and emerging economies and also among them, mainly differentiated by vaccine access. This is reflected most vividly in monetary policy actions and stances, with some of them staying the course of remaining accommodative and supporting growth and others pre-emptively tightening monetary policy on the assessment that inflation presents a bigger risk. Decoupling of growth paths and the disconnect in monetary policy responses pose downside risks to the global recovery, which already appears to be losing steam. Global economic conditions are also besieged by the resurgence of inflation across the world. Some central banks, mostly in advanced economies (AEs), have judged the rise in inflation as transitory, while some others, mostly in emerging market economies (EMEs) regard breaches of upper tolerance bands as unacceptable and growth threatening. Financial markets are trying to second-guess the commencement of normalisation. Episodic shifts in risk appetite have rendered equity markets frothy with stretched valuations, with intermittent flights into and out of the safety of bonds. Meanwhile, EMEs are awash with capital flows and rotations thereof on taper talk and carry trade and currencies have turned volatile as a result. Several countries that had unlocked their economies and encouraged mobility have faced renewed surges of infections from the Delta variant of the virus, which has turned

the evolving global outlook highly uncertain and fragile.

Global growth has been supported by strong external demand on the back of buoyant merchandise trade. The World Trade Organization's (WTO) goods trade barometer hit a high in June 2021 reading. The 20-point year-on-year (y-o-y) rise in the index reflects both the strength of the recent trade expansion and the depth of the pandemic-induced shock in 2020. Worryingly, though, the rate of increase in the index has started to come off, presaging a peaking of the upward momentum in world trade. Container shortages, increased port turnover time and three major shipping alliances controlling much of the supplies have resulted in a jump in freight rates putting the sustainability of the global trade expansion at risk. Services trade continues to lag merchandise trade, with significant contraction in international travel services, although in Q2 some improvement is evident, including through revenge tourism, and increase in transport and other goods related services boosted by demand for goods and freight rates.

In India, the recovery that was taking hold from the second half of 2020-21 was disrupted by the second wave of COVID-19 in the weeks following the release of the April 2021 MPR. Although the ferocity of the second wave was not anticipated, the loss of output was about 40 per cent less than during the first wave, as adaptation to pandemic protocols limited restrictions to localised and region-specific containment measures instead of the nation-wide lockdown that was enforced during the first wave. Nevertheless, inflationary pressures became accentuated, as set out earlier, with erosion in fiscal positions. Against this backdrop, the pace of domestic economic activity in Q1:2021-22 (April-June) turned out to be somewhat

weaker than anticipated in the April MPR and remained below 2019-20 levels. High frequency indicators of activity suggest that the economy may be pulling out of the second wave's impact, but uncertainty about the incidence of the third wave makes the outlook fraught with risks.

Thus, the pandemic continues to have an overwhelming influence on global and domestic macroeconomic conditions. Virus mutations threaten the progress made through vaccinations and medical responses. Infections keep flaring up in various geographies, forcing authorities to reimpose restrictions/lockdowns restraining economic activity. At the same time, greater adaptability, rising vaccination coverage and continuation of policy support are working towards mitigating the effects of new waves of the pandemic. Equal and universal vaccination holds the key to a brighter outlook, both globally and domestically.

#### *Monetary Policy Committee: April-September 2021*

During April-September 2021, the MPC met thrice. In the April meeting, the MPC noted that supply side pressures on inflation could persist while demand-side pull remains moderate. On the gross domestic product (GDP) growth outlook, the jump in COVID-19 infections in certain parts of the country and the associated localised lockdowns were seen as dampening the demand for contact-intensive services, restraining growth impulses and prolonging the return to normalcy. In such an environment, the MPC observed that continued policy support remained necessary and unanimously voted to keep the policy repo rate unchanged and to continue with the accommodative stance as long as necessary to sustain growth on a durable basis and mitigate the impact of COVID-19 on the economy, while ensuring that inflation remained within the target going forward.

In the June 2021 meeting, the MPC observed that the rising trajectory of international commodity prices, especially of crude, together with logistics costs, posed upside risks to the inflation outlook with weak demand conditions tempering the pass-through to core inflation. On the growth outlook, the MPC noted that the second wave of COVID-19 had altered the near-term outlook, and policy support from all sides – fiscal, monetary and sectoral – was required to nurture recovery and expedite return to normalcy. Accordingly, the MPC decided unanimously to maintain *status quo* on the policy repo rate and continue with the accommodative stance.

When the MPC met in August, headline inflation had breached the upper threshold for the second month in succession in June due to strong momentum in the May print running across all the major sub-groups. The MPC assessed that the inflationary pressures were largely driven by transitory supply shocks while stressing that it was conscious of its objective of anchoring inflation expectations. On growth, the MPC noted that the outlook for aggregate demand was improving, but it was still weak and there was a large amount of slack in the economy, with output below its pre-pandemic level. It judged that the nascent and hesitant recovery needed to be nurtured. Accordingly, the MPC decided unanimously to keep the policy repo rate unchanged and on a 5 to 1 majority to continue with the accommodative stance.

The MPC's voting pattern on the policy repo rate setting during H1:2021-22 reflected broader unanimity in members' assessments and expectations, mirroring the voting outcomes in a number of other central banks (Table I.1).

#### *Macroeconomic Outlook*

Chapters II and III analyse the macroeconomic developments during H1:2021-22 (April-September).

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

Country	Policy Meetings: April - September 2021			
	Total meetings	Meetings with full consensus	Meetings without full consensus	Variation in policy rate (basis points)
Brazil	4	4	0	350
Chile	4	4	0	100
Colombia	4	1	3	25
Czech Republic	4	1	3	125
Hungary	6	6	0	105
India	3	3	0	0
Israel	4	2	2	0
Japan	4	0	4	0
South Africa	3	3	0	0
Sweden	3	3	0	0
Thailand	4	3	1	0
UK	4	4	0	0
US	4	4	0	0

**Sources:** Central bank websites.

For the updated projections set out in this Chapter, the evolution of key macroeconomic and financial variables over the past six months warrants revisions in the baseline assumptions as set out below (Table I.2).

First, global crude oil prices have hardened substantially since the April MPR on the back of a rebound in demand and regulated production by the Organization of the Petroleum Exporting Countries (OPEC) *plus*. Crude prices initially eased from July 2021 highs on the back of the decision by OPEC *plus* to increase production by 0.4 million barrels per day on a monthly basis starting August and the moderation in demand due to renewed surge in COVID-19 infections. Crude prices, however, hardened again in August-September on supply disruptions due to hurricanes and fall in inventories. Taking into account these developments, crude prices (Indian basket) are assumed at US\$ 75 per barrel in the baseline, 16 per cent above the April 2021 MPR baseline (Chart I.1).

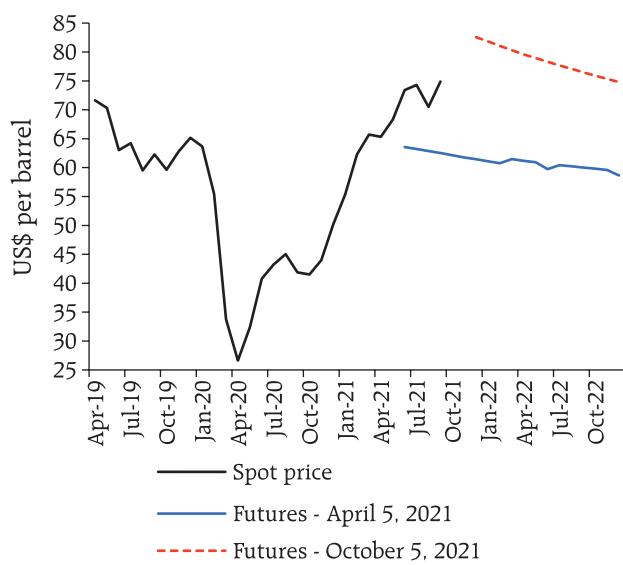
**Table I.2: Baseline Assumptions for Projections**

Indicator	MPR April 2021	MPR October 2021
Crude Oil (Indian basket)	US\$ 64.6 per barrel during 2021-22	US\$ 75 per barrel during H2:2021-22
Exchange rate	₹72.6/US\$ during 2021-22	₹74.3/US\$ during H2:2021-22
Monsoon	Normal for 2021	1 per cent below long-period average
Global growth	5.5 per cent in 2021 4.2 per cent in 2022	6.0 per cent in 2021 4.9 per cent in 2022
Fiscal deficit (per cent of GDP)	To remain within BE 2021-22 Centre: 6.8 Combined: 10.8	To remain within BE 2021-22 Centre: 6.8 Combined: 10.2
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.

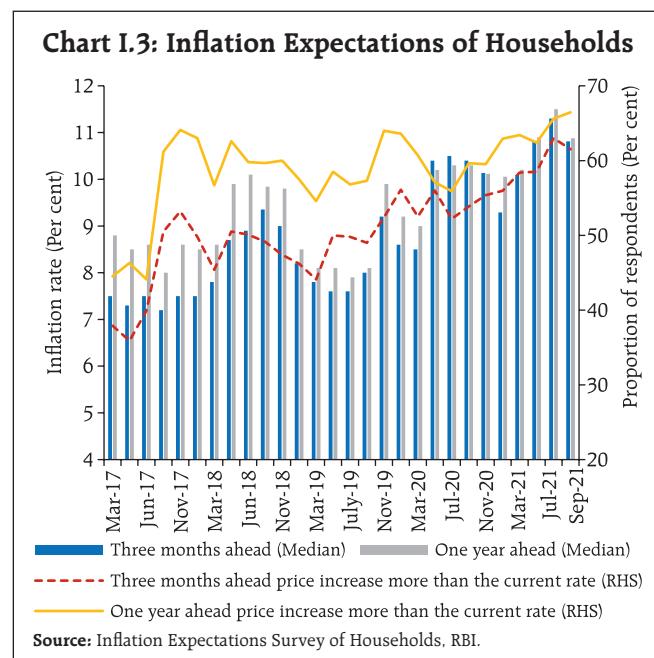
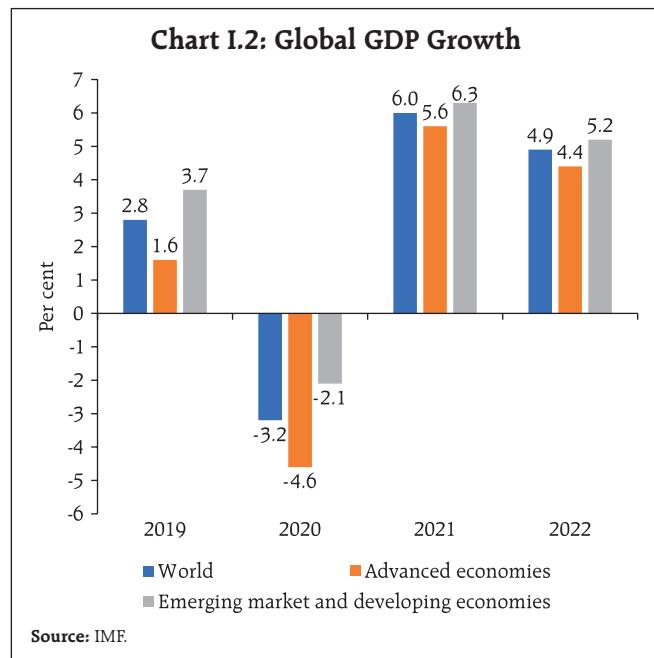
**Sources:** RBI estimates; Budget documents; and IMF.

Second, the nominal exchange rate (the Indian rupee or INR *vis-à-vis* the US dollar) has exhibited two-way movements in a range of INR 72-75 per US dollar since April 2021. After depreciating in early-April on concerns about the economic fallout from the second wave, the INR remained under appreciating pressures until May 2021. It depreciated again in June on a strengthening US dollar and rising crude oil prices. The INR appreciated in August with the resumption of portfolio flows, but this was reversed in September. Taking these developments into consideration, the exchange rate is assumed at INR

**Chart I.1: Brent Prices**

74.3 per US dollar in the baseline as against INR 72.6 in the April MPR.

Third, the strength of global growth and external demand has been stronger than the April MPR baseline, *albeit* with some loss of momentum in recent months over renewed infections and persisting global supply-demand imbalances in key inputs such as chips and semiconductors (Chapter V). Growth prospects of AEs have improved significantly on better vaccine coverage and higher fiscal support relative to emerging market and developing economies (EMDEs) (Chart I.2). After a strong rebound in Q1:2021, the pace of expansion in global merchandise trade has slowed, weighed down by elevated shipping charges and logistics costs. The global manufacturing purchasing managers' index (PMI) remained in expansion at 54.1 in September 2021, unchanged from August's six-month low as supply chain issues continued to hinder output growth.



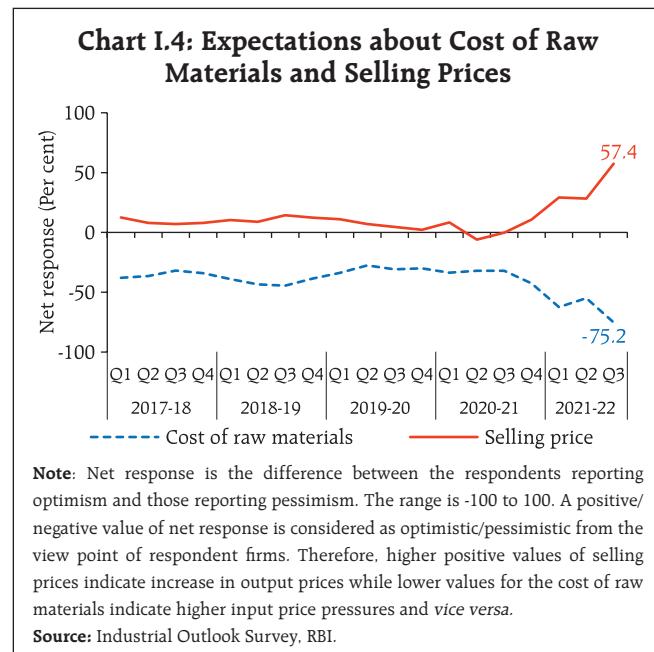
## I.2 The Outlook for Inflation

Consumer price index (CPI) inflation breached the upper tolerance threshold of 6 per cent in May and June 2021 driven by supply-side pressures in food, fuel and core inflation. In August 2021, inflation eased to 5.3 per cent, aided by a moderation in momentum and favourable base effect.

Looking ahead, the three months and one year ahead median inflation expectations of urban households fell by 50 basis points (bps) and 60 bps, respectively, in the September 2021 round of the Reserve Bank's survey, tracking actual inflation dynamics.<sup>1</sup> The proportion of respondents expecting the general price level to increase by more than the current rate decreased for three months ahead horizon but increased for one year ahead horizon *vis-à-vis* the previous round (Chart I.3).

Manufacturing firms polled in the July-September 2021 round of the Reserve Bank's industrial

outlook survey expect the cost of raw materials and selling prices to rise further in Q3:2021-22 (Chart I.4).<sup>2</sup> Service sector companies participating in the services and infrastructure outlook survey also



<sup>1</sup> The Reserve Bank's inflation expectations survey of households is conducted in 18 cities and the results of the September 2021 survey are based on responses from 5,958 households.

<sup>2</sup> The results of the July-September 2021 round of the industrial outlook survey are based on responses from 1,414 companies.

expect further rise in input cost pressure and selling prices in Q3:2021-22.<sup>3</sup> According to the respondents in the manufacturing and services PMIs, input and output price pressures persisted in September 2021.

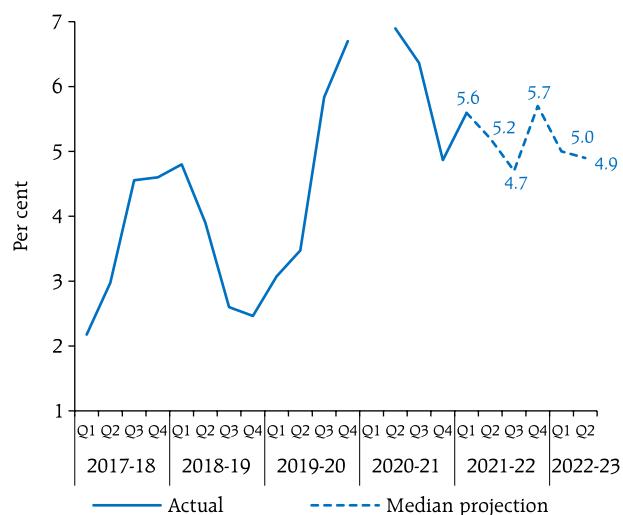
Professional forecasters surveyed by the Reserve Bank in September 2021 expect CPI inflation to ease from 5.3 per cent in August 2021 to 4.7 per cent in Q3:2021-22 and subsequently move up to 5.7 per cent in Q4:2021-22 before easing to 4.9 per cent in Q2:2022-23 (Chart I.5).<sup>4</sup>

Kharif sowing has progressed satisfactorily and foodgrains production is estimated to touch a new record which, along with ample buffer stocks of foodgrains, should help to contain cereal prices. Global food, oil and other commodity prices, however, remain firm. Taking into account the initial conditions, signals from forward-looking surveys and estimates from structural and other time-series

models, CPI inflation is projected to move from 5.6 per cent during Q1:2021-22 to 5.1 per cent in Q2, 4.5 per cent in Q3, and 5.8 per cent in Q4, with risks broadly balanced (Chart I.6). The 50 per cent and the 70 per cent confidence intervals for headline inflation in Q4:2021-22 are 4.4-7.2 per cent and 3.6-8.0 per cent, respectively. For 2022-23, assuming a normalisation of supply chains on the back of improved vaccination, a normal monsoon and no major exogenous or policy shocks, structural model estimates indicate that inflation will move in a range of 4.5-5.2 per cent. The 50 per cent and the 70 per cent confidence intervals for Q4:2022-23 are 2.7-6.3 per cent and 1.7-7.2 per cent, respectively.

There are a number of upside and downside risks to the baseline inflation forecasts. The upside risks emanate from a longer-than-expected persistence of supply chain disruptions; a further hardening of global commodity prices, especially that of crude oil; a quicker pass-through of input cost pressures to output prices on the back of strong pent-up domestic demand from ebbing infections and vaccination-led

**Chart I.5: Professional Forecasters' Projection of CPI Inflation**

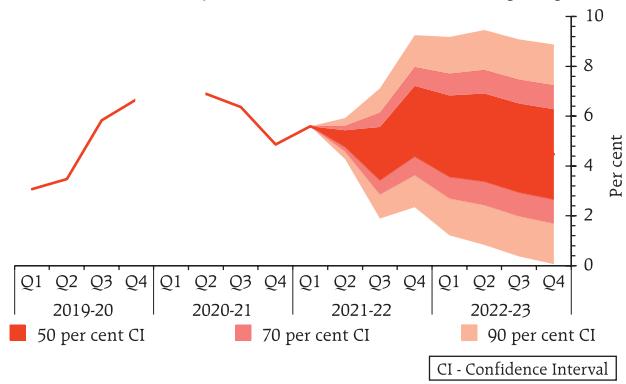


Sources: Survey of Professional Forecasters, RBI and National Statistical Office.

<sup>3</sup> Based on 788 companies polled in July-September 2021 round of services and infrastructure outlook survey.

<sup>4</sup> 34 panellists participated in the September 2021 round of the Reserve Bank's survey of professional forecasters.

**Chart I.6: Projection of CPI Inflation (y-o-y)**



**Note:** The fan chart depicts uncertainty around the baseline projection path. The baseline projections are conditioned upon the assumptions set out in Table I.2. The thick red shaded area represents 50 per cent confidence interval, implying that there is 50 per cent probability that the actual outcome will be within the range given by the thick red shaded area. Likewise, for 70 per cent and 90 per cent confidence intervals, there is 70 per cent and 90 per cent probability, respectively, that the actual outcomes will be in the range represented by the respective shaded areas.

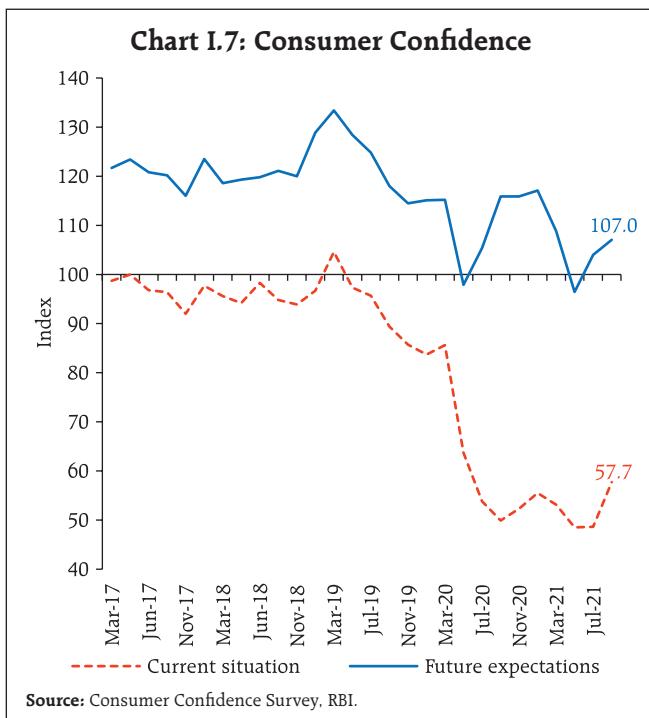
**Source:** RBI staff estimates.

consumer confidence; unseasonal rainfall impacting crop production; and global financial market volatility from a faster US monetary policy normalisation. The downside risks arise from an earlier than expected mending of supply chain disruptions; the persistence of weak demand and slack in the economy; and corrections in global commodity and crude prices in the event of a weakening of global demand over new mutants and poor vaccination coverage in low-income countries.

### I.3 The Outlook for Growth

With the ebbing of the second wave, a phased relaxation of the pandemic-related localised restrictions, and improving vaccine coverage, economic activity has been normalising gradually since June 2021. Looking ahead, prospects for the agricultural sector and rural demand look promising, supported by the late revival in *kharif* sowing. Urban demand is also likely to accelerate with the release of pent-up demand, aided by the significant expansion in the pace of vaccination since July and improving consumer confidence – as of October 6, 2021, nearly 27 per cent of India's adult population has been fully vaccinated, while 71 per cent has received one dose. This augurs well for the sustenance of contact-intensive activities and consumption demand. The government's focus on capital expenditure and continued reform push, large foreign direct investment flows, congenial monetary and financial conditions, and boom in the initial public offerings provide a conducive environment for investment activity. There are signs that the investment pipeline could increase in the rest of 2021-22 and in the coming year, given the interest in the production linked incentive (PLI) scheme and the continued focus on road infrastructure.

Turning to the key messages from forward-looking surveys, the consumer confidence (the

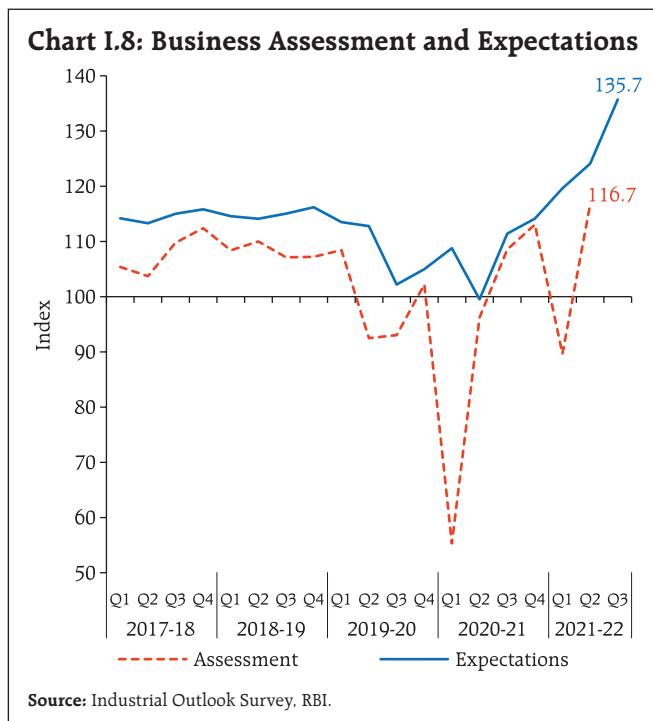


current situation index) in the September 2021 round recovered marginally from the all-time low recorded in May-July 2021, while index for the year ahead remained in the optimistic zone, driven by recovery in sentiments on the general economic situation, the employment scenario and household spending (Chart I.7).<sup>5</sup>

Sentiments in the manufacturing sector for the quarter ahead strengthened further in the July-September 2021 round of the Reserve Bank's industrial outlook survey, reflecting optimism on production, order books, capacity utilisation, and employment (Chart I.8). Services and infrastructure sectors expect further strengthening in overall business situation and turnover in Q3:2021-22.

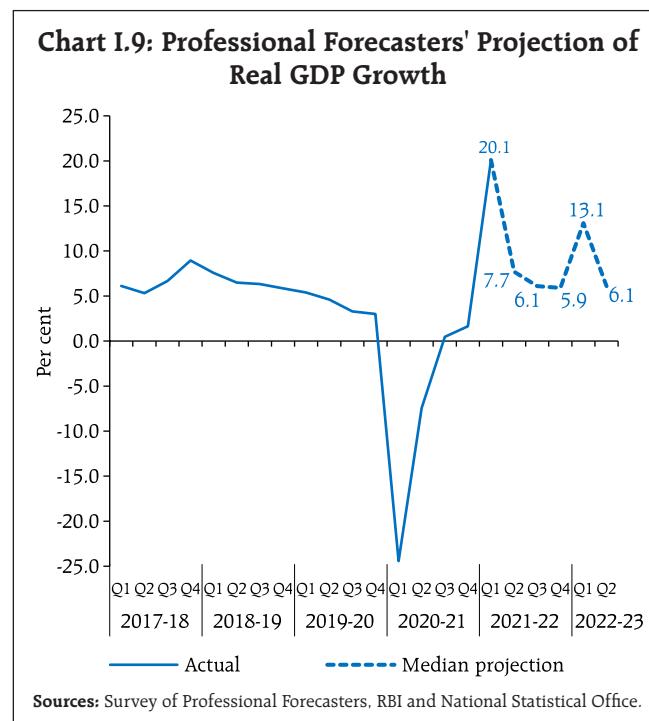
Surveys by other agencies released during May-July generally reported a decline in business expectations over the previous rounds but remained

<sup>5</sup> The survey is conducted by the Reserve Bank in 13 major cities and the September 2021 round is based on responses from 5,237 respondents.



upbeat from a year ago (Table I.3). According to the purchasing managers' survey for September 2021, the one year ahead business expectations of firms in the manufacturing and services sectors were optimistic *albeit* below historical levels.

Professional forecasters polled in the September 2021 round of the Reserve Bank's survey expect real



GDP growth to move from 20.1 per cent in Q1:2021-22 to 5.9 per cent in Q4; it is expected at 13.1 per cent in Q1:2022-23 due to base effects and 6.1 per cent in Q2 (Chart I.9).

While the near-term prospects are bolstered by the lower base of last year, the outlook is contingent on the evolving COVID-19 trajectory. Taking into account the Q1 growth of 20.1 per cent, baseline assumptions, survey indicators, and model forecasts, real GDP growth is projected at 9.5 per cent in 2021-22 – 7.9 per cent in Q2, 6.8 per cent in Q3, and 6.1 per cent in Q4 – with risks evenly balanced around this baseline path (Chart I.10 and Table I.4).

For 2022-23, the structural model estimates indicate real GDP growth at 7.8 per cent, with quarterly growth rates in the range of 5.0-17.2 per cent, assuming restoration of supply chains, a normal monsoon, no major exogenous or policy shocks, and full vaccination. There are upside and downside risks to the baseline growth path. Stronger-than-expected pent-up demand amidst a faster pace of vaccination and mild variants of the virus, and government's

**Table I.3: Business Expectations Surveys**

Item	NCAER Business Confidence Index (July 2021)	FICCI Overall Business Confidence Index (May 2021)	Dun and Bradstreet Composite Business Optimism Index (July 2021)	CII Business Confidence Index (June 2021)
Current level of the index	61.8	51.5	74.2	50.4
Index as per previous survey	85.2	74.2	61.5	68.7
% change (q-o-q) sequential	-27.5	-30.6	20.7	-26.6
% change (y-o-y)	33.2	20.0	152.4	22.9

**Notes:**

1. NCAER: National Council of Applied Economic Research.
  2. FICCI: Federation of Indian Chambers of Commerce & Industry.
  3. CII: Confederation of Indian Industry.
- Sources:** NCAER, FICCI, CII and Dun & Bradstreet Information Services India Pvt. Ltd.

**Table I.4: Projections - Reserve Bank and Professional Forecasters**

	(Per cent)	
	2021-22	2022-23
<b>Reserve Bank's Baseline Projections</b>		
Inflation, Q4 (y-o-y)	5.8	4.5
Real GDP growth	9.5	7.8
<b>Median Projections of Professional Forecasters</b>		
Inflation, Q4 (y-o-y)	5.7	4.9*
Real GDP growth	9.4	6.8
Gross domestic saving (per cent of GNDI)	29.5	29.8
Gross capital formation (per cent of GDP)	30.0	30.7
Credit growth of scheduled commercial banks	7.5	8.1
Combined gross fiscal deficit (per cent of GDP)	10.5	9.0
Central government gross fiscal deficit (per cent of GDP)	6.8	5.6
Repo rate (end-period)	4.0	4.25*
Yield on 91-days treasury bills (end-period)	3.8	4.3
Yield on 10-year central government securities (end-period)	6.4	6.6
Overall balance of payments (US\$ billion)	50.6	35.0
Merchandise exports growth	30.0	8.0
Merchandise imports growth	36.1	9.1
Current account balance (per cent of GDP)	-0.7	-1.1

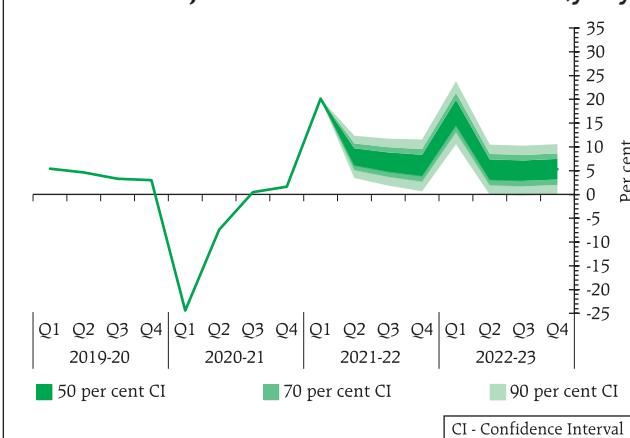
\*: Q2:2022-23.

**Note:** GNDI: Gross National Disposable Income.**Sources:** RBI staff estimates; and Survey of Professional Forecasters (September 2021).

focus on infrastructure investment and asset monetisation and reform measures provide an upside to the baseline growth path. On the contrary, new and more contagious variants of the virus, elevated levels of crude oil and commodity prices, more persistent pandemic-related domestic as well as global supply bottlenecks and global financial market volatility pose downside risks to the baseline growth path.

#### I.4 Balance of Risks

The baseline projections of inflation and growth presented in the previous sections are premised on the assumptions relating to key domestic and international macroeconomic and financial conditions set out in Table I.2. The inherent uncertainties around these assumptions, exacerbated by COVID-19 and its

**Chart I.10: Projection of Growth in Real GDP (y-o-y)**

**Note:** The fan chart depicts uncertainty around the baseline projection path. The baseline projections are conditioned upon the assumptions set out in Table I.2. The thick green shaded area represents 50 per cent confidence interval, implying that there is 50 per cent probability that the actual outcome will be within the range given by the thick green shaded area. Likewise, for 70 per cent and 90 per cent confidence intervals, there is 70 per cent and 90 per cent probability, respectively, that the actual outcomes will be in the range represented by the respective shaded areas.

**Source:** RBI staff estimates.

variants, have a significant bearing on the inflation and growth trajectories. Some plausible alternative scenarios to assess the balance of risks around the baseline projections are presented in this section.

#### (i) Global Growth Uncertainties

While the global growth outlook has been upgraded relative to the April MPR, it remains highly susceptible to COVID-19's trajectory in view of the uneven spread of vaccination across countries and more contagious new variants of the virus, apart from volatility in global commodity prices and the elevated uncertainty over US monetary policy normalisation. First, continuing global supply chain disruptions are adversely impacting production in several manufacturing activities and could dampen global growth more than currently anticipated with additional headwinds from the steep increase in natural gas prices in recent weeks. Second, a slowing Chinese economy may drag down external demand. Third, if the inflationary pressures emanating from the demand-supply bottlenecks in the US and other AEs were to turn out to be persistent, it could trigger an

earlier exit than currently being telegraphed from the accommodative policies in the major AEs, induce large financial market volatility and pose downside risks to global growth. Fourth, an escalation of geo-political tensions remains a potential source of downside risk to global growth. In such a scenario, if the global recovery slips by 100 bps below the baseline, domestic growth and inflation could be lower by around 40 bps and 30 bps, respectively. Conversely, a more widespread and equitable distribution of vaccines across the world, sustained success in containing the spread of new mutants, faster resolution of logistic bottlenecks, and the spike in inflation in major AEs reversing quickly could boost global economic activity. In such a scenario, assuming that global growth surprises by 100 bps on the upside, domestic growth and inflation could edge higher by around 40 bps and 30 bps, respectively (Charts I.11a and I.12a).

#### (ii) International Crude Oil Prices

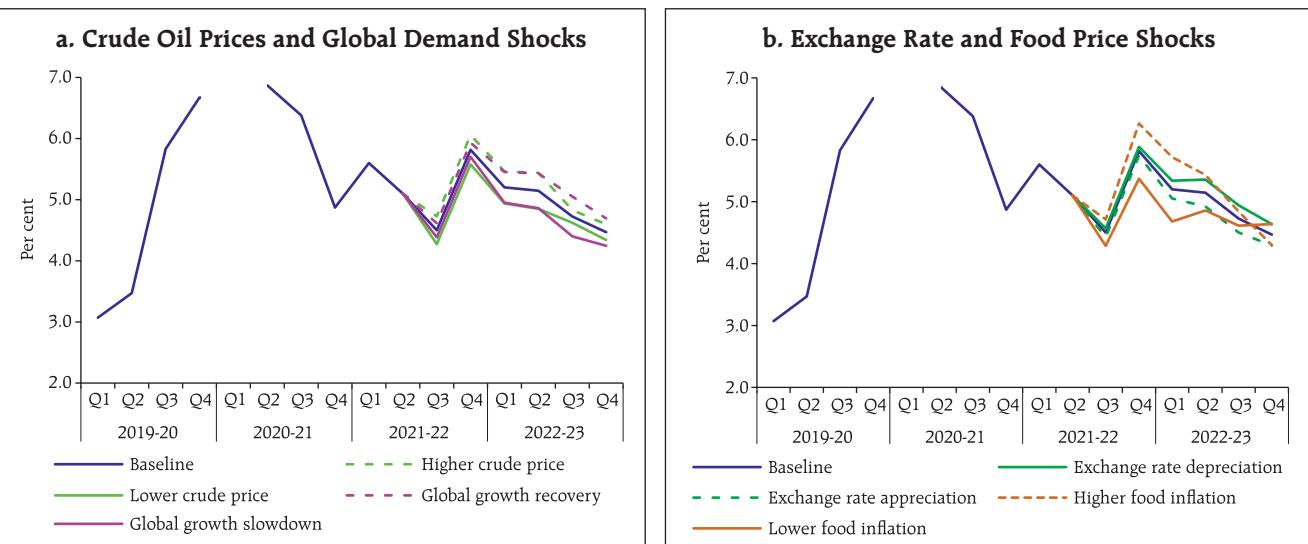
International crude oil prices have firmed up amidst elevated volatility with the gradual resumption in economic activity, improvement in global demand and calibrated output normalisation by the OPEC

*plus*. The supply-demand dynamics in the global oil market are subject to several uncertainties. On the supply side, shortfall in the OPEC *plus* production and rise in geo-political tensions could constrain supply and increase oil prices above the baseline. On the demand side, a better containment of COVID-19 infections could induce higher global growth, a faster closing of the global output gap and a sharper increase in international crude oil prices. Assuming crude oil prices to be 10 per cent above the baseline (Table I.2), domestic inflation could be higher by 30 bps and growth weaker by around 20 bps over the baseline. Conversely, crude oil prices could soften below the baseline if the global recovery is more subdued owing to a faster spread of virus mutations, delays in vaccination or improved supplies of shale gas. In this scenario, if the price of the crude falls by 10 per cent relative to the baseline, inflation could ease by around 30 bps with a boost of 20 bps to growth (Charts I.11a and I.12a).

#### (iii) Exchange Rate

The INR has exhibited two-way movements over the past six months, reflecting both global and

**Chart I.11: Impact of Risk Scenarios on the Baseline Inflation Path**



Source: RBI staff estimates.

domestic factors. The divergent paths of recovery across AEs and EMEs and the risk of currently elevated inflation in AEs acquiring a more structural character could necessitate an early exit from ultra-accommodative monetary policies by the AE central

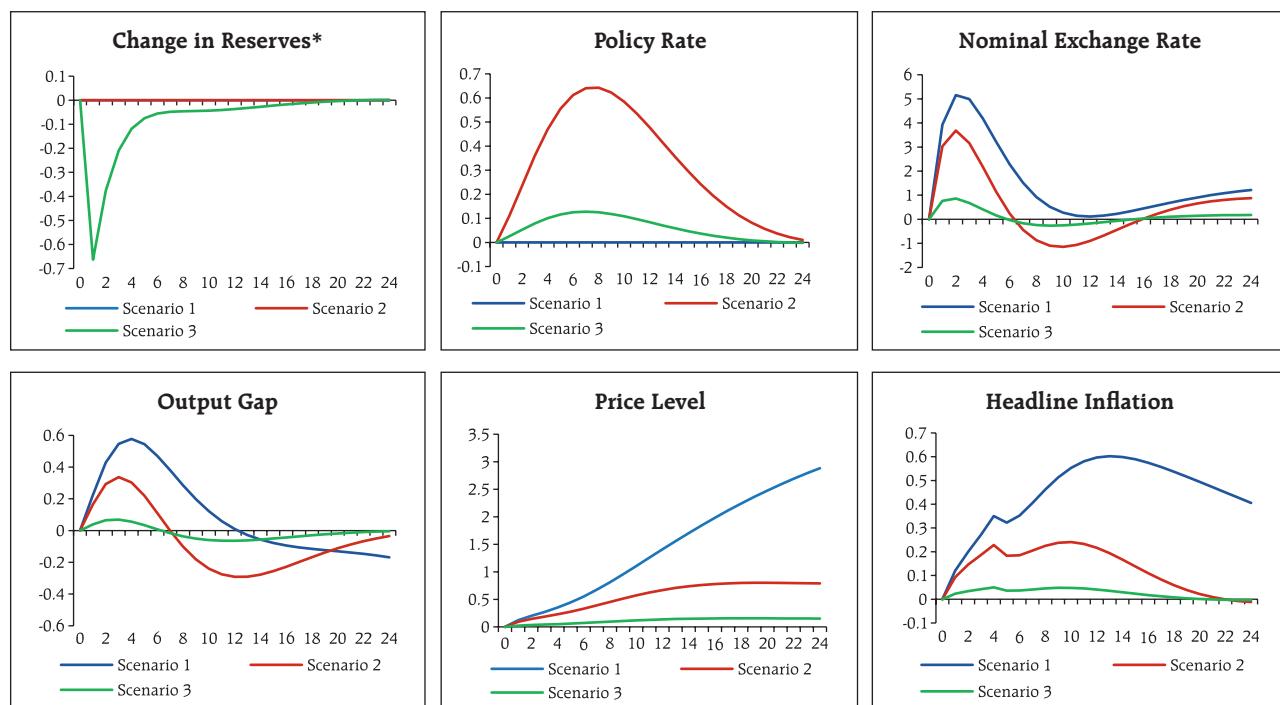
banks. The resultant heightened volatility in global financial markets could lead to a generalised risk aversion to EMEs assets, capital outflows and downward pressures on their currencies (Box I.1). A 5 per cent depreciation of INR from the baseline

### Box I.1: Capital Flow and Exchange Rate Shocks: Macroeconomic Implications

Capital flows to EMEs ease external financing constraints and help to increase domestic investment and growth. On the other hand, such flows are often volatile and prone to sudden stops and reversals, causing disorderly movements in the exchange rate that can feed into domestic inflation and output. These effects are amplified by interactions with equity and bond markets and derivative positions. Furthermore, undesirable and unintended fluctuations in liquidity resulting from volatile capital flows can vitiate the monetary policy stance (Das, 2021).

The macroeconomic implications of capital flows for the Indian economy can be analysed through the Quarterly Projection Model (QPM)<sup>6</sup> (RBI, 2021) under alternative scenarios. In Scenario 1, the central bank allows the impact of capital flows to be borne out fully by the exchange rate with no monetary action. In Scenario 2, movements in the exchange rate pass through into inflation, causing a deviation of inflation from the target that prompts monetary policy action. Alternatively, the central bank may resort to a judicious combination

**Chart I.1.1: Capital Flows and Exchange Rate: Impact on Inflation and Growth**



\*: Per cent of nominal GDP.

**Note:** x-axes indicate quarters after the shock and y-axes indicate deviations from the baseline path in percentage points. Charts show the impact of an exogenous capital outflows shock (calibrated to one per cent of nominal GDP) on the economy. Scenarios 1, 2 and 3 are described in the text.

**Source:** RBI staff estimates.

(Contd.)

<sup>6</sup> The QPM is a semi-structural, forward-looking, open economy, calibrated, gap model in the New Keynesian tradition and provides an internally consistent analysis of various feedback mechanisms (RBI, 2021).

of forex intervention and sterilisation, exchange rate adjustment and monetary policy action (Scenario 3) to contain the impact of the volatility in capital flows on the domestic economy.

In Scenario 1, there is a sustained deviation of inflation from the target (Chart I.1.1). Inflation deviations are relatively contained in scenario 2 but this comes at the cost of volatility in output because monetary policy is calibrated to bring inflation back to the target. Scenario 3, which involves forex intervention and sterilisation, helps to insulate the domestic economy from the capital flows shock, with only marginal impact on inflation and output. This policy combination reduces volatility in the forex market and helps the central bank to pursue

a relatively more accommodative monetary policy in support of growth. The Reserve Bank of India undertakes two sided interventions in the spot, forward and futures markets to stabilise financial markets and liquidity conditions so that monetary policy retains its domestic orientation and the independence to pursue national objectives.

#### References:

Das, Shaktikanta (2021), "Governor's Statement", June 4, 2021, Reserve Bank of India.

Reserve Bank of India (2021), *Monetary Policy Report*, April 2021.

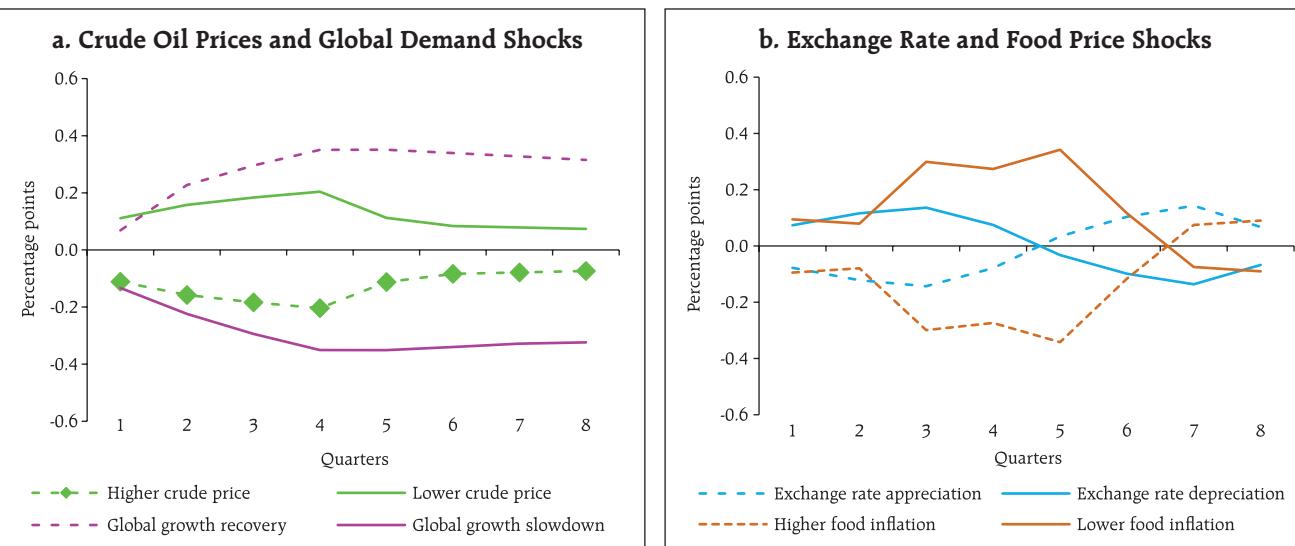
(Table I.2) in such a scenario could increase domestic inflation by up to 20 bps, while GDP growth could be higher by 15 bps through a boost to exports. On the other hand, given India's relatively better growth outlook, boost to growth from the expanding scale of vaccination and reform measures by the government to attract foreign capital, INR could appreciate. In such a scenario, if the INR appreciates by 5 per cent relative to the baseline, inflation and growth could

moderate by around 20 bps and 15 bps, respectively (Charts I.11b and I.12b).

#### (iv) Food Inflation

Food inflation moderated in July-August from the recent peak in June 2021, driven largely by the deepening deflation of vegetable prices. Inflation in edible oil prices, however, remains substantially elevated at 33.0 per cent in August. The expectations of record

**Chart I.12: Impact of Risk Scenarios on the Baseline Growth Path**



Source: RBI staff estimates.

*kharif* foodgrains production and large buffer stocks for cereals augur well for food prices. These developments along with continued effective supply management of key food items and easing of international food prices could soften headline inflation by around 50 bps. Conversely, a further hardening of international food prices, demand-supply imbalances in some food items and unseasonal rainfall could exert upward pressure on headline inflation by around 50 bps (Charts I.11b and I.12b).

### I.5 Conclusion

Domestic economic activity is normalising after the ferocious second wave retarded momentum. The outlook remains overcast by the future path of the pandemic; however, the accelerated progress in the

pace of vaccination, release of pent-up demand in the upcoming festival season, boost to investment activity from the government's focus on infrastructure and asset monetisation, and accommodative monetary and liquidity conditions provide an upside to the baseline growth path. While the inflation trajectory is expected to be driven by supply-side factors and risks are to the upside, a faster resolution of global as well as domestic supply chain disruptions, softer international crude oil and food prices as pent-up demand normalises, and another round of good foodgrains production and effective supply management, could cause inflation to undershoot the baseline, contingent on the evolution of the pandemic and the efficacy of vaccines.

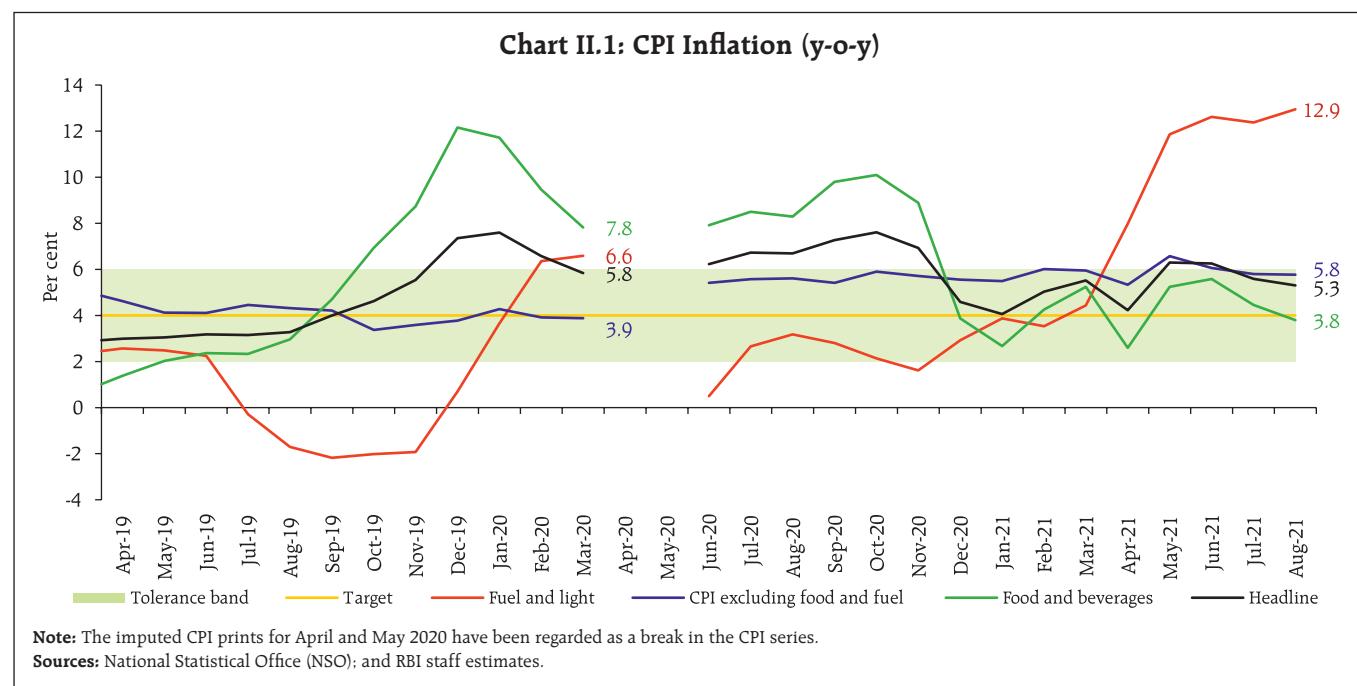
## II. Prices and Costs

*Consumer price index (CPI) inflation remained highly volatile during March-August this year – after moderating close to the target rate in April, it rose abruptly to breach the upper tolerance threshold during May-June with a sharp pickup in food, fuel and core inflation and moderated in July-August on substantial softening in food inflation. Costs of farm and non-farm inputs remained elevated. Nominal rural wages for both agricultural and non-agricultural labourers were stagnant while staff costs in the organised sector rose.*

Since the publication of the April 2021 MPR, headline CPI inflation<sup>1</sup> that had fallen close to the target rate of 4.0 per cent in April, sprang back amidst the second wave of intense infections to breach the upper tolerance threshold and touched 6.3 per cent during May-June 2021.<sup>2</sup> This unanticipated spike came from a sharp pick-up in food and core (CPI excluding food and fuel<sup>3</sup>) inflation which peaked at 6.6

per cent in May 2021 – the highest since May 2014, and fuel inflation which at 12.6 per cent in June 2021 was the then highest recorded in the CPI series. In the following months, however, inflation quickly moderated by one percentage point to 5.3 per cent by August on a substantial softening in food inflation even as fuel inflation scaled another high and core inflation remained sticky and elevated. On the whole, CPI inflation has been highly volatile in the five months of the current financial year – moving within a wide range of 4.2 per cent to 6.3 per cent – averaging 5.5 per cent (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 2021 MPR had projected range-bound movement in CPI inflation – an average of 5.0 per cent in Q4:2020-21 to 5.2 per cent in Q1 and Q2 of 2021-22. Actual inflation for Q1:2021-22 at 5.6 per cent and Q2:2021-22 (July-August) at 5.4 per



<sup>1</sup> Headline inflation is measured by year-on-year changes in all-India consumer price index – combined (CPI-C).

<sup>2</sup> CPI inflation for April-May 2021 was computed based on imputed CPI indices for April-May 2020.

<sup>3</sup> 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.

cent turned out to be higher than the projections by 35 bps and 27 bps, respectively (Chart II.2).

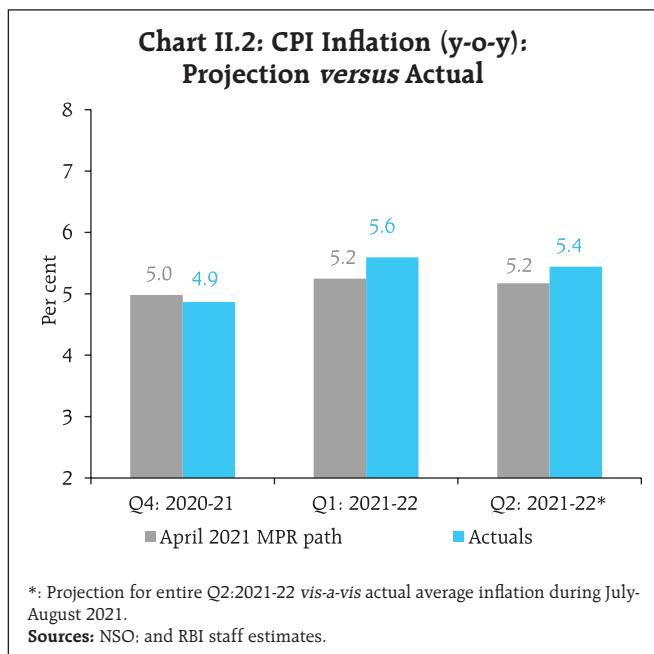
A number of factors impinging on food, fuel and core contributed to this overshoot. First, the rapid spread of COVID-19's second wave at the start of 2021-22 resulted in restrictions on activity being imposed over a large swath of the country. These restrictions, in turn, resulted in transitory price pressures in Q1, especially in May, through supply-chain disruptions, elevated retail margins as well as from difficulties in accurate price measurements due to localised lockdowns and restrictions on non-essential commercial activities in several states.<sup>4</sup> As restrictions eased and activity normalised, the effects of these factors dissipated from June. Second, the unanticipated surge in global energy prices kept petrol and diesel inflation firmly in double digits.

The April 2021 MPR had assumed an Indian basket crude oil price of US\$ 64.6 per barrel during 2021-22; however, crude oil prices edged up to a peak level of US\$ 75 per barrel in early July before moderating to US\$ 70 per barrel by end-August. Third, there was an extraordinary surge in international edible oil prices which fed into domestic inflation formation.<sup>5</sup> Fourth, the persistence of industrial input and transport cost pressures and subsequent transmission to selling prices of manufactured goods was more than what was anticipated, in spite of demand conditions weakening due to the second wave.

## II.1 Consumer Prices

A dip in inflation to 4.2 per cent in April 2021 was overwhelmed in May 2021 by a sharp pick up in price momentum<sup>6</sup> spanning across food, fuel and core groups, resulting in a surge in inflation by 2.1 percentage points to 6.3 per cent. In June, headline inflation plateaued, with positive price momentum completely neutralised by a favourable base effect which became even larger in July and more than offset the broad-based price momentum taking down headline inflation to 5.6 per cent in July. With overall price momentum registering a sharp deceleration in August, coming from a steady food price index, headline inflation moderated further to 5.3 per cent (Chart II.3).

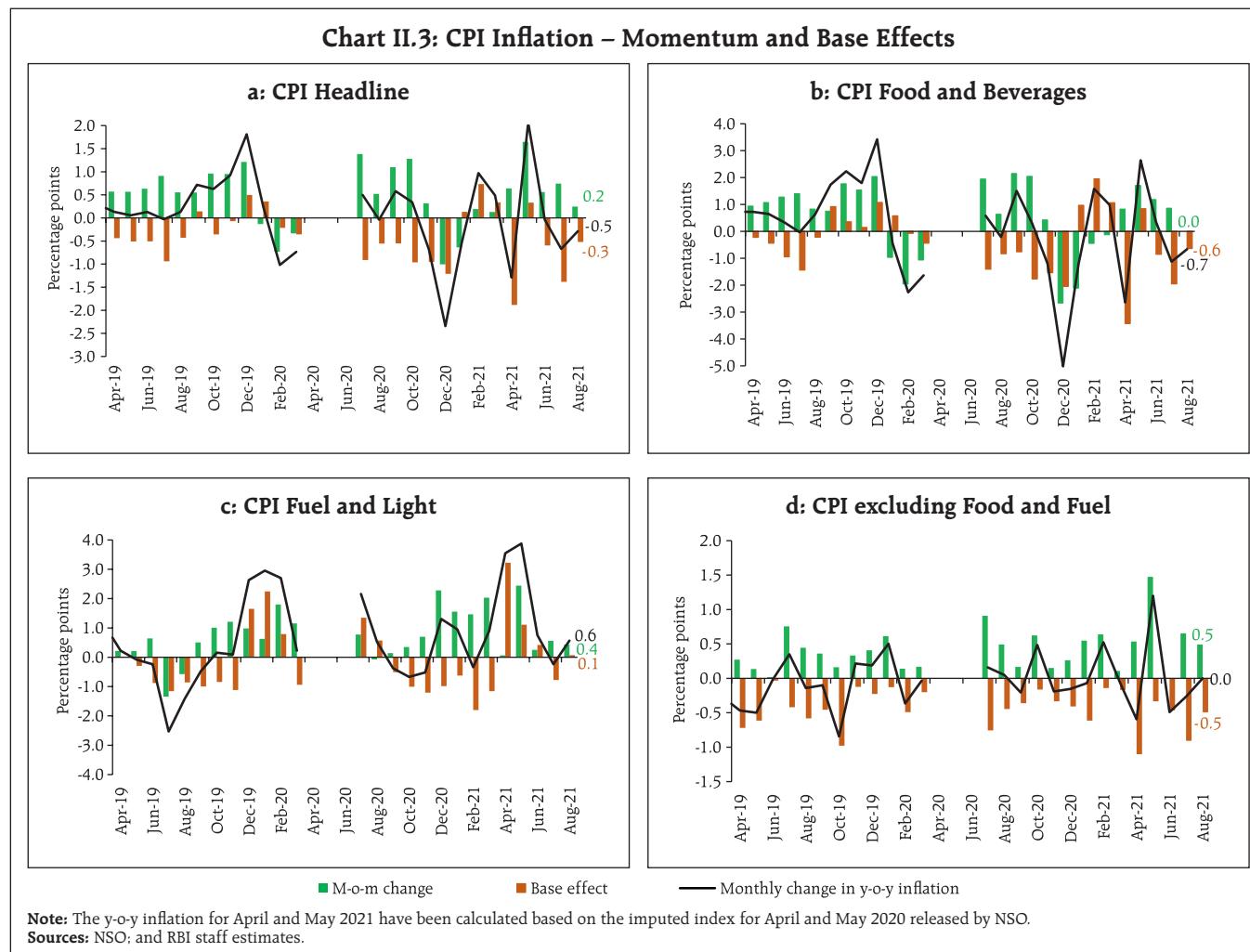
The distribution of CPI inflation during January-August 2021 varied distinctly from the pattern in the past few years. There has been a shift in the mean of the distribution from 3.4 per cent for 2017-2019 (January-August) to 5.3 per cent in 2021 so far



<sup>4</sup> In May 2021, the market-wise price reporting fell to 68.1 per cent in rural areas (from 84.6 per cent in April 2021 and 89.1 per cent in March 2021) and 67.5 per cent in urban areas (from 87.4 per cent in April 2021 and 93.6 per cent in March 2021).

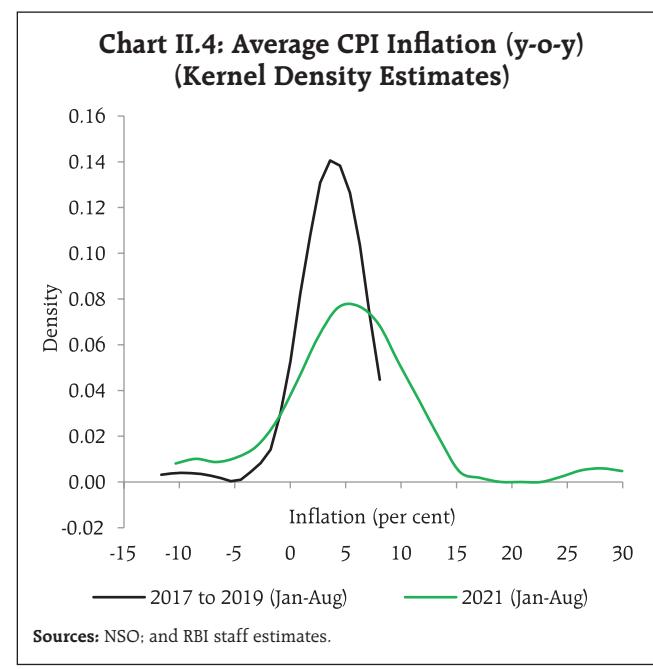
<sup>5</sup> About 58 per cent of the domestic consumption of edible oil is imported.

<sup>6</sup> 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.



(Chart II.4). This was accompanied by an increase in volatility – with the standard deviation in 2021 more than two times that of 2017-2019 – and positive skewness, compared to a negative skew for the 2017-2019 period. These indicate high dispersion of inflation rates in the CPI basket, along with a larger number of items experiencing higher inflation rates than in the pre-pandemic period. The positive skew reflected outlier double-digit inflation in the CPI distribution, primarily on account of oils and fats.

During April-August 2021, 8 of the 23 sub-groups in CPI with a cumulative weight of 49.7 per cent contributed 82.7 per cent of CPI inflation, much higher than their contribution of 56.2 per cent in 2020-21 (Table II.1).



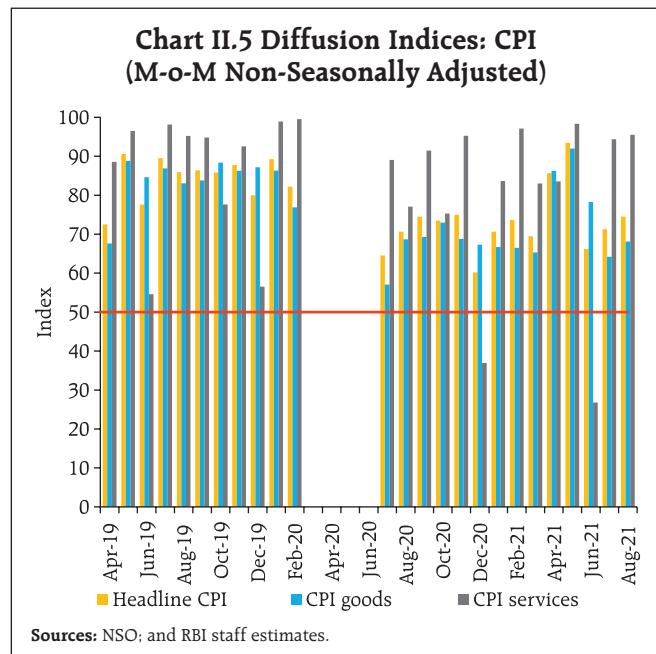
**Table II.1: Contribution of CPI sub-groups to Headline CPI Inflation**

Sr. No.	Commodity	Weight	FY 2020-21 (June-March)*		FY 2021-22 (April-August)	
			Average inflation (y-o-y, per cent)	Average contribution (per cent)	Average inflation (y-o-y, per cent)	Average contribution (per cent)
1	Oils and fats	3.56	16.8	9.1	31.4	18.3
2	Transport and communication	8.59	10.6	13.4	11.1	15.6
3	Fuel and light	6.84	2.8	3.3	11.6	13.4
4	Health	5.89	5.4	5.7	7.9	8.6
5	Meat and fish	3.61	16.0	10.8	9.6	8.0
6	Housing	10.07	3.2	5.8	3.8	7.2
7	Prepared meals, snacks, sweets etc.	5.55	4.5	4.7	5.6	6.0
8	Clothing	5.58	3.4	3.4	5.7	5.7
<b>Total</b>		<b>49.69</b>	<b>6.8</b>	<b>56.2</b>	<b>9.4</b>	<b>82.7</b>
<b>CPI-Combined</b>		<b>100.00</b>	<b>6.1</b>	<b>100.0</b>	<b>5.5</b>	<b>100.0</b>

\* The imputed CPI prints for April and May 2020 have been regarded as a break in the CPI series.

Sources: NSO; and RBI staff estimates.

The non-seasonally adjusted diffusion indices of price changes<sup>7</sup> remained elevated (barring for services in June), indicative of price increases being broad-based across the CPI basket (Chart II.5).<sup>8</sup>



<sup>7</sup> In view of the non-availability of CPI item level data for the period March-May 2020, the diffusion indices have been constructed with item level indices without seasonal adjustment.

<sup>8</sup> The CPI diffusion index, a measure of dispersion of price changes, categorises items in the CPI basket according to whether their prices have risen, remained stagnant or fallen over the previous month. A reading above 50 for the diffusion index signals a broad expansion or generalisation of price increases and a reading below 50 signals broad-based price decline.

## II.2 Drivers of Inflation

The role of various factors impinging upon inflation dynamics can be captured through vector autoregression (VAR) estimates and historical decomposition.<sup>9</sup> Inflationary pressures in Q1:2021-22 can be attributed to adverse supply shocks, firming up of asset prices and easy monetary conditions, even as muted demand conditions contributed to a softening of inflationary pressures. By Q2:2021-22 some softening in inflationary pressures came about from softening of wage pressures (Chart II.6a).

In terms of contribution of goods and services to headline inflation, the pick-up in inflation in June 2021 emanated from perishables – edible oils, fruits and vegetables – and semi-perishable

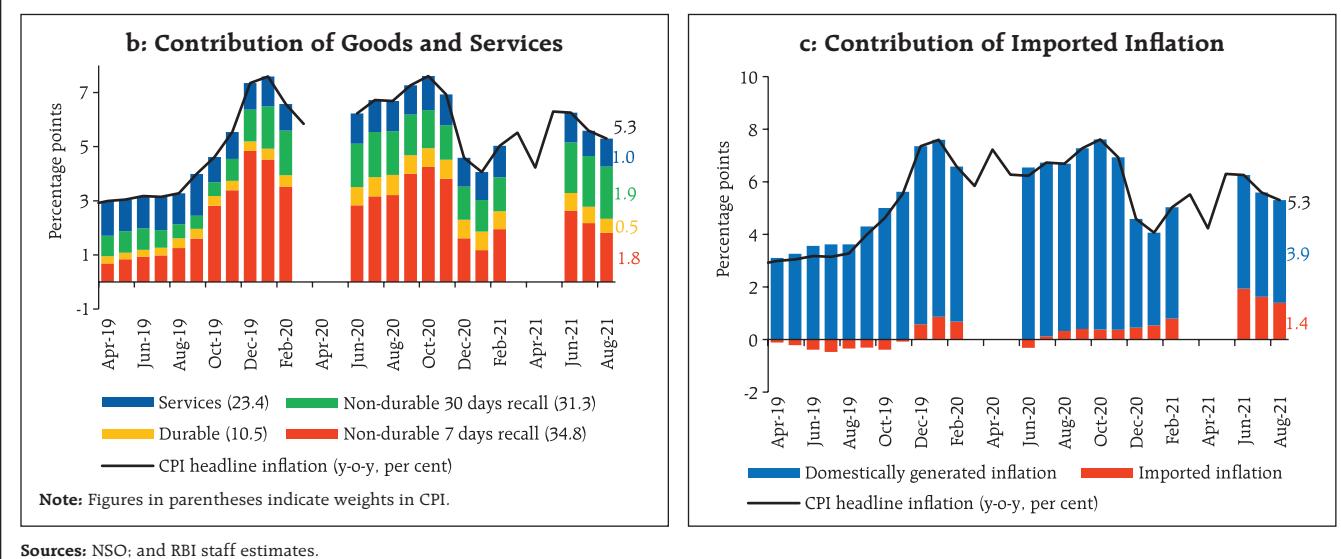
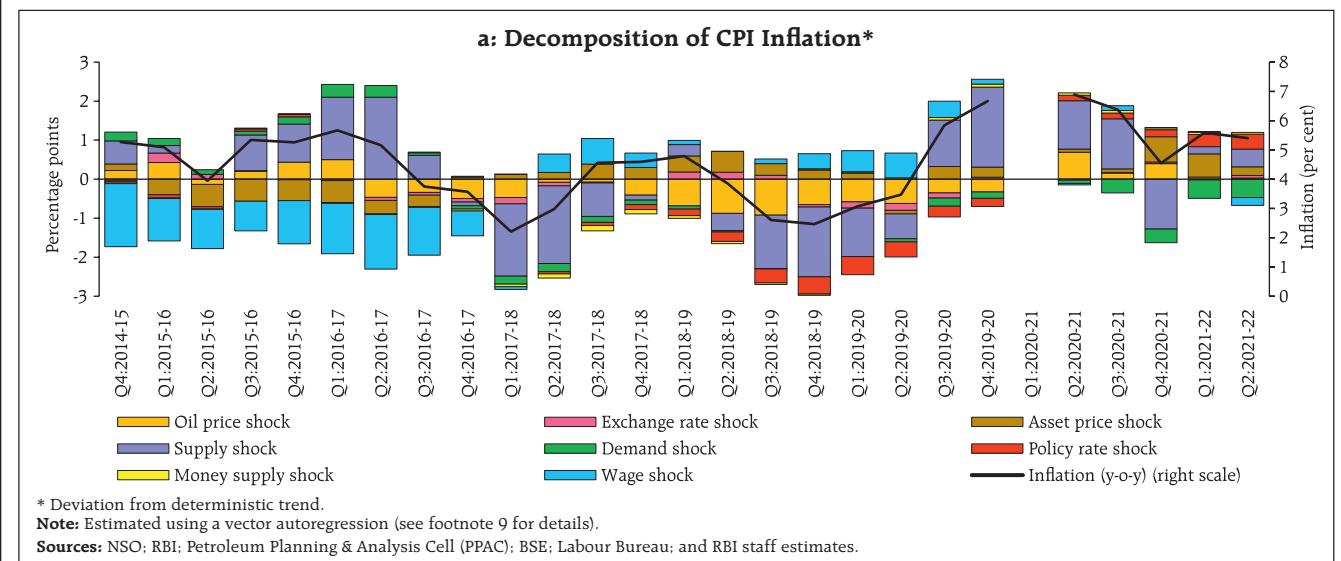
<sup>9</sup> Historical decomposition estimates the contribution of each shock to the movements in inflation over the sample period (Q4:2010-11 to Q1:2021-22) based on a vector autoregression (VAR) with the following variables (represented as the vector  $Y_t$ ) – crude oil prices; exchange rate (INR 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 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.

goods (non-durable goods with a 30-day recall<sup>10</sup>) like LPG, kerosene, petrol, diesel, medicines and fast-moving consumer goods (FMCGs). In July-August, the contribution of perishables to headline inflation registered a sharp moderation, even as the contributions of semi-perishables, durables and services to headline inflation were largely

steady (Chart II.6b). Some of the stickiness in semi-perishables and durables goods inflation reflected the transmission of high international prices.

The surge in international prices of edible oil, silver and petroleum products resulted in an increase in the contribution of imported components to

**Chart II.6: Drivers of CPI Inflation**



<sup>10</sup> 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 for frequently purchased items – edible oil, eggs, fish, meat, vegetables, fruits, spices, beverages, processed foods, pan, tobacco and intoxicants – during the last seven days; for clothing, bedding, footwear, education, medical (institutional), durable goods, during the last 365 days; and for all other food, fuel and light, miscellaneous goods and services including non-institutional medical services, rents and taxes, data relate to the last 30 days.

headline inflation – from 0.8 percentage points in February to a peak level of 1.9 percentage points in June before moderating to 1.4 percentage points in August 2021 (Chart II.6c).

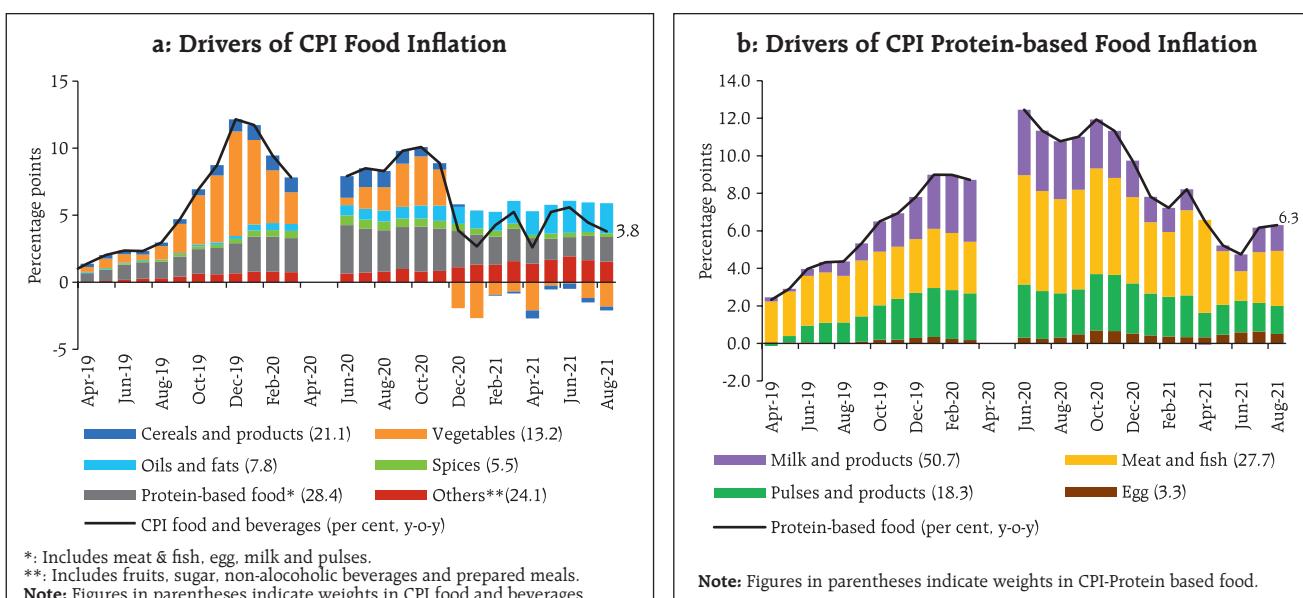
### Food Group

Food and beverages inflation treaded within a range of 2-6 per cent during March-August 2021 and on an average contributed around 37.2 per cent of headline inflation (CPI food has a weight of 45.9 per cent in the CPI basket). Elevated international prices of edible oils along with price pressures in protein rich items remained the major drivers (Chart II.7). The summer uptick in vegetables prices during May-July 2021 led to an increase in price pressures, while a decline in prices of cereals, protein-based food and fruits along with a sharp deceleration in vegetable price momentum in August 2021 provided relief dragging down food inflation to 3.8 per cent. Overall, the food price build-up in the financial year so far has been lower than historical patterns, even as price build-ups in oils and fats, eggs, meat and fish, non-

alcoholic beverages and spices were higher than their long-term averages (Chart II.8). Excluding vegetables, during April-August 2021, food and headline inflation would have averaged 6.3 per cent and 6.5 per cent respectively, as against an overall average rate of 4.3 per cent for food and 5.5 per cent for headline.

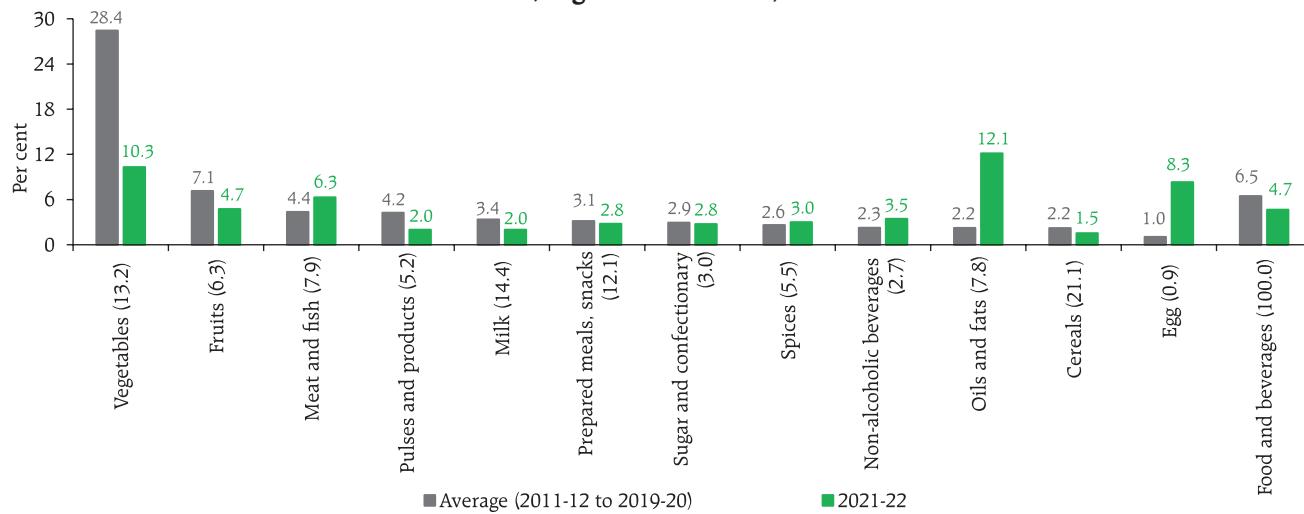
Prices of cereals (weight of 9.7 per cent in the CPI and 21.1 per cent in the food and beverages group) remained in deflation during March-August 2021, primarily reflecting favourable base effects and muted momentum. Within cereals, both rice and wheat witnessed subdued price pressures (barring May 2021) on the back of ample buffer stocks relative to norms (2.7 times and 1.8 times for rice and wheat, respectively, as on September 16, 2021) and distribution under *Pradhan Mantri Garib Kalyan Anna Yojana* (PMGKAY). In May 2021, restrictions on activity across many states affected supply chains leading to a pick up in prices. Moreover, production remained robust, with an increase of 2.9 per cent for rice and 1.5 per cent for wheat (as per the 4<sup>th</sup> Advance Estimates (AE) 2020-21 over 2019-20 Final Estimates (FE).

**Chart II.7: CPI Food Inflation**



Sources: NSO; and RBI staff estimates.

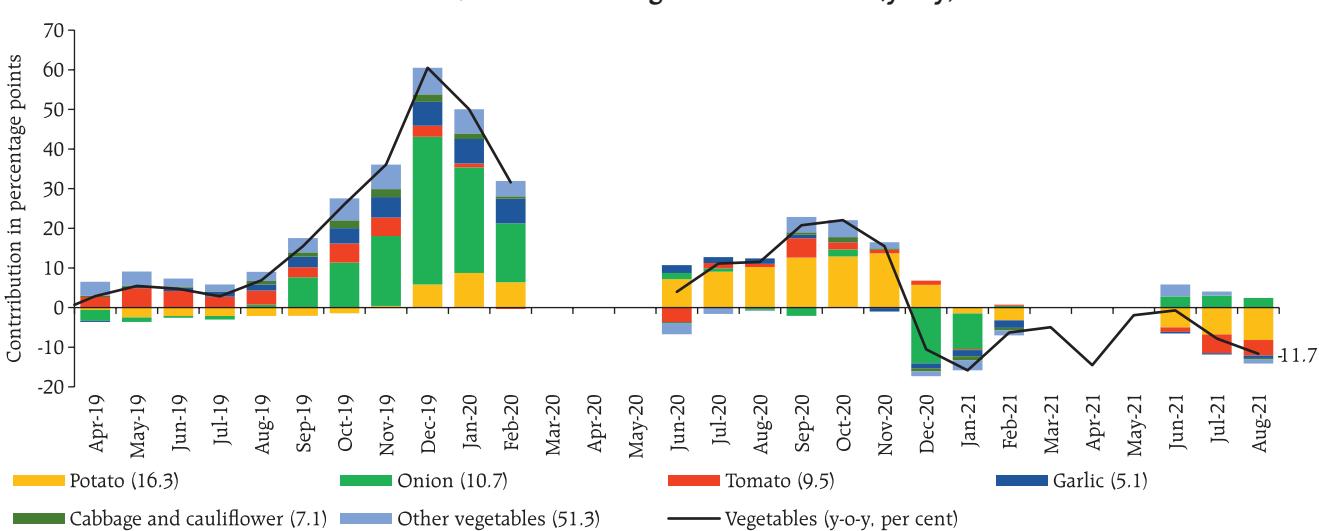
**Chart II.8: Financial Year Price Build-up  
(August over March)**



In the case of vegetables (weight of 6.0 per cent in the CPI and 13.2 per cent in the food and beverages group), prices remained in deflation during March-August 2021 (Chart II.9), reflecting, *inter alia*, favourable base effects. The three key vegetables – tomatoes, onions and potatoes – largely witnessed price increases during May-July 2021 less than the

usual summer uptick. While prices of potatoes and onions eased in August 2021, tomato prices picked up due to lower supply in the markets as the lean period set in. Crop damage due to heavy rains and flood like situations in major tomato producing states such as Andhra Pradesh and Karnataka also impacted *mandi* arrivals. After moderating during March-May

**Chart II.9: Drivers of Vegetables Inflation (y-o-y)**



**Note:** Figures in parentheses indicate items' weights in CPI-Vegetables. Item level data were not released by NSO for the months of March, April and May 2020.  
**Sources:** NSO; and RBI staff estimates.

2021, onion prices edged up subsequently, reflecting the seasonal uptick as well as damage to stored *rabi* onions in Maharashtra and Gujarat due to cyclone *Tauktae*. Potato prices were in deflation during June-August 2021, reflecting favourable base effects and easing of prices in August 2021 with higher production (10.6 per cent in 2020-21) in response to elevated prices observed in the previous year, and higher cold storage stocks in major producing states. On the whole, as noted earlier, the price build-up in vegetables remained lower than their historical

average in the financial year so far, reflecting the recovery of production (higher by 4.2 per cent in 2020-21 2<sup>nd</sup> AE compared to 2019-20 FE).

In a rapidly changing scenario where volatility in prices of key vegetables has substantial fallout on headline inflation, there is a need for real time monitoring of price situation, especially in case of perishables. Price sentiment derived from unstructured data contained in news articles can provide useful leading information on prices (Box II.1).

#### Box II.1: News Sentiment-based Analysis of Food Inflation Outlook

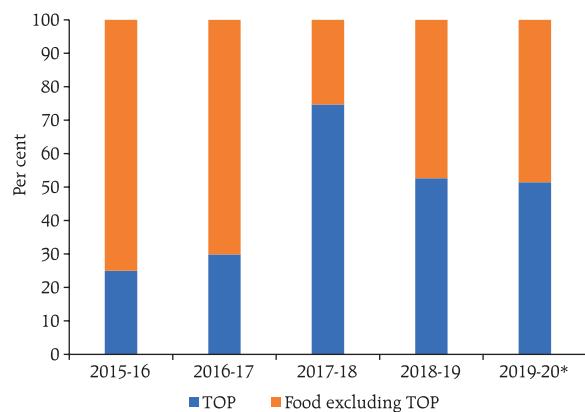
Strengthening market intelligence on high-impact food items is an integral element in inflation forecasting framework of the Reserve Bank. Newspaper articles provide information on local events that may lead to large swings in nation-wide retail food prices. Unstructured textual data in news items can be processed and quantified using text-mining techniques to analyse the nature of shocks and inflation dynamics. Three main vegetables *viz.*, tomatoes, onions and potatoes (TOP), with a combined

weight of 2.2 per cent in the CPI, have high contribution to variance in food price inflation (Chart II.1.1).

A lexicon-based approach was adopted for computation of commodity-wise sentiment index, based on news items published in nine leading news dailies during the period 2016-2020<sup>11</sup>. For each commodity-specific news item, the Loughran-McDonald lexicon, designed specifically for analysing economic and financial texts was used to assign a sentiment score  $\{S_{i,n,t}\}$  to each polarized word  $i$  occurring in a news article  $d_n$  published at time  $t$  (Loughran and McDonald, 2011). 'Positive' (indicating easing in prices) and 'negative' (indicating increase in prices) words were assigned a sentiment score of (+1) and (-1), respectively. A sentiment score ( $S_{n,t}$ ) was computed at the document level such that  $S_{n,t} = \frac{1}{W_d} \sum_{i=1}^{Q_d} S_{i,n,t}$  where  $Q_d$  represents the total number of polarized words and  $W_d$  is the total number of words in a news article. The document-wise sentiment score was aggregated across time such that  $NSS_t = \sum_{n=1}^{N_t} S_{n,t}$  represents the time-series for the final net sentiment score (NSS), where  $N_t$  is total number of news articles for the given commodity on day 't'. Accordingly, a positive sentiment score indicates an expected fall in prices, while a negative sentiment score suggests an expected increase in prices.

(Contd.)

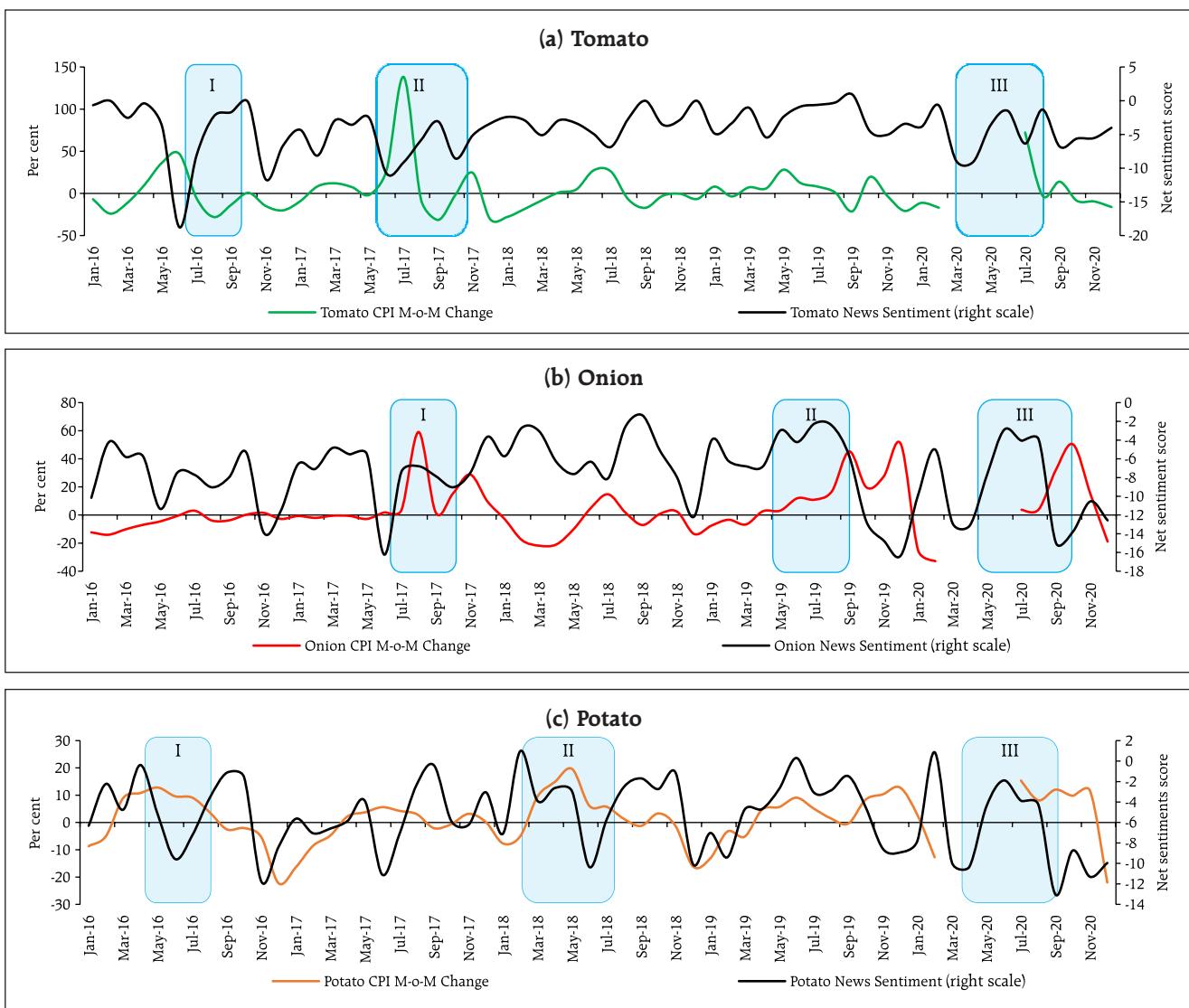
**Chart II.1.1: Contribution of TOP to Variance in Food Inflation**



**Note:** \* Covers April 2019 to February 2020, as item level data for March-May 2020 were not released by NSO.

<sup>11</sup> Measured using words occurring in each news article, sentiments in this context can be construed to convey optimism (decrease) or pessimism (increase) about the price situation of a given commodity. For the analysis, a novel dataset of daily news items published in nine leading news dailies during 2016-2020 was constructed and filtered based on occurrence of keywords encompassing 'supply', 'demand' and 'prices' of TOP commodities. The framework laid down by Ardia *et al.* (2021) was used for sentiment computation and analysis.

### Chart II.1.2: Major Price Shock Events and Net Sentiments



**Note:** The shaded areas in graphs represent the following episodes:

*Tomato:* (I) Heatwave affected production (II) Farmers' protests (III) Excess rains; *Onion:* (I) Excess rains (II) Late withdrawal of monsoon (III) Excess rains; *Potato:* (I) Low production – blight in West Bengal (II) Low production (III) Low storage.

**Sources:** NSO; and RBI staff estimates.

Monthly net sentiment score of TOP and changes in their prices as reflected in CPI show a negative relationship between them, as expected (Chart II.1.2). Large increases in TOP prices seen after major supply shocks coincide with large fall in sentiment related to each of the three commodities. Sentiments were found to 'Granger cause' change in prices, implying the predictive power of news-based sentiment in capturing future price movements of TOP. The results show that NSS can provide forward-looking information for price movements in TOP (up to 30 days as per the Granger

causality test), which could be useful for nowcasting of food price inflation.

#### References:

Ardia, D., Bluteau, K., Borms, S., and Boudt, K. (2021). The R Package Sentometrics to Compute, Aggregate and Predict with Textual Sentiment. *Journal of Statistical Software*, 99(2).

Loughran, T., and McDonald, B. (2011). When is a Liability not a Liability? Textual Analysis, Dictionaries, and 10-Ks. *The Journal of Finance*, 66(1), 35-65.

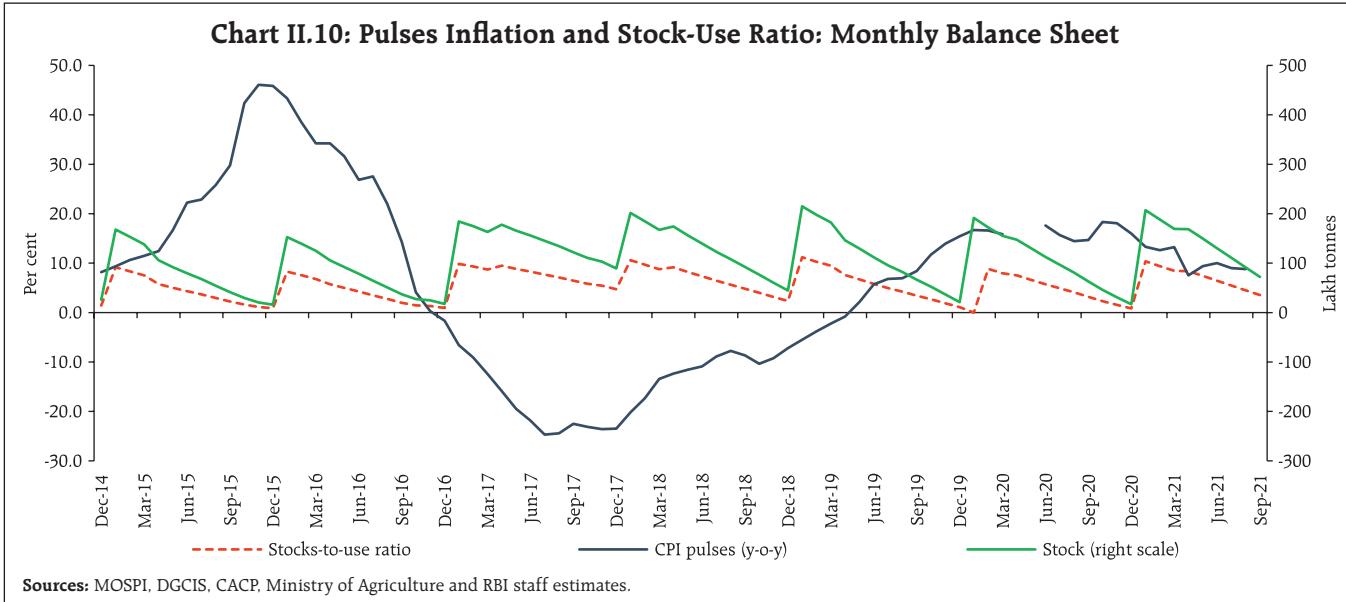
Despite pulses production of 257.2 lakh tonnes during 2020-21, an increase of 11.7 per cent over 2019-20 – augmenting domestic supply and overall stocks, factors like localised lockdowns in the second wave resulted in supply chain driven demand-supply gaps, accentuated by lower arrival of imports and precarious stock positions in the case of *masur* (Chart II.10). To address the tight demand supply situation, the government undertook several supply side initiatives such as imposing stock limits in July 2021 on some pulses under the Essential Commodities Act, 1955, easing import restrictions to enhance domestic availability of *tur*, *urad* and *moong*, a memorandum of understanding (MoUs) with Myanmar, Malawi and Mozambique for pulses imports, and reducing basic import duty and Agriculture Infrastructure and Development Cess (AIDC) on *masur* to 0 per cent<sup>12</sup> and 10 per cent, respectively.

Inflation in meat, fish and eggs witnessed upside pressures during March-July 2021 primarily reflecting feed cost pressures and transportation costs (Chart II.11a). Prices of key items such as eggs,

chicken, mutton and fish surged as a consequence of several factors – increase in soybean meal prices (international soybean meal prices increased by 32.3 per cent in July 2021 compared to July 2020); restricted operations of the poultry industry during the second wave; festive demand in July 2021; damage of fishing boats owing to cyclones *Tauktae* and *Yaas*; higher fuel prices and the annual ban on fishing in the west coast during monsoons. However, prices eased in August 2021 reflecting seasonal fall in demand during the month of *srawana*.

In the case of milk and products (weight of 6.6 per cent in the CPI and 14.4 per cent in the food and beverages group), a lean season of production coincided with upward revision in retail prices by ₹ 2 per litre by major milk co-operatives like *Amul* and *Mother Dairy* in July 2021 which was followed by many other state milk co-operatives such as *Milkfed* in Punjab, *Gokul* in Maharashtra and *Parag* in Uttar Pradesh, resulting in price pressures in July 2021. Milk cooperatives have cited various reasons for increase in input costs such as cost of transport, feed prices and operational costs of processing and packaging.

**Chart II.10: Pulses Inflation and Stock-Use Ratio: Monthly Balance Sheet**



Sources: MOSPI, DGCIS, CACP, Ministry of Agriculture and RBI staff estimates.

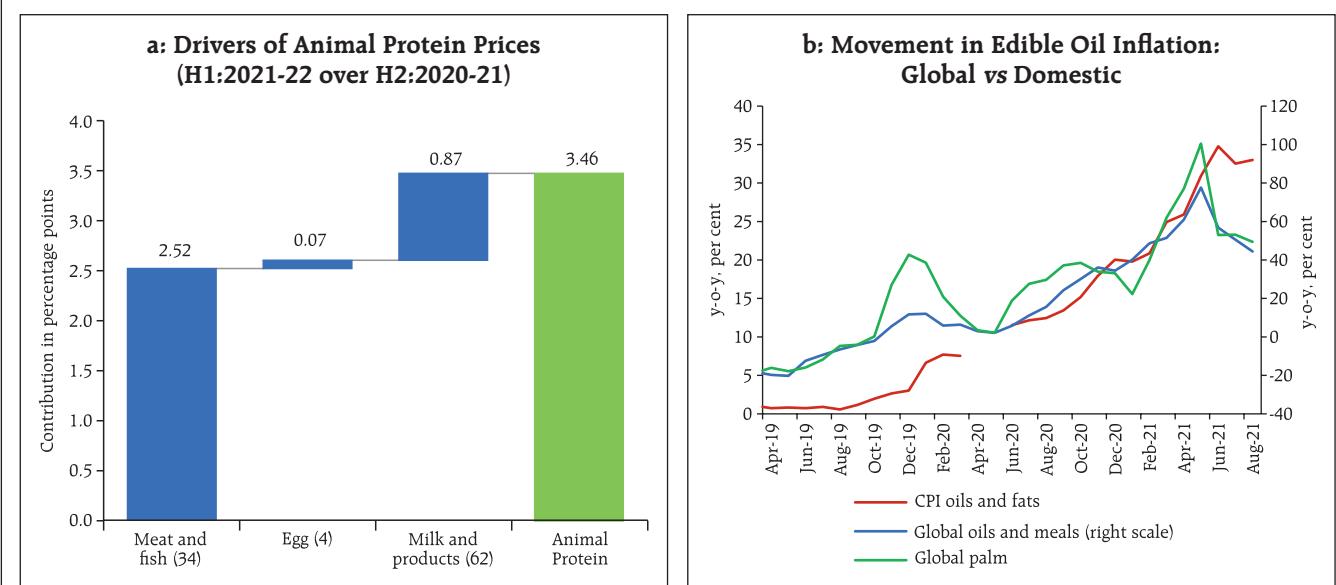
<sup>12</sup> For non-US origin.

However, post July 2021, no increase in retail milk prices by other milk cooperatives has been reported.

Inflation in oils and fats experienced price pressures in the post-lockdown period and shot up to an all-time high of 34.8 per cent in June 2021, mirroring elevated international edible oil prices (Chart II.11b). Prices fell in July 2021 in response to the supply side measures announced by the government, before showing some uptick in August to 33.0 per cent. Global palm oil prices escalated due to labour shortage in Malaysia and adverse weather conditions leading to lower than expected production and high export duties on crude palm oil. A number of measures were taken to alleviate price pressures, including reduction in import duty on crude and refined palm oil from 15.0 per cent to 10.0 per cent (effective rate reduced from 35.75 per cent to 30.25 per cent) and 45.0 per cent to 37.5 per cent (effective rate reduced from 49.5 per cent to 41.25 per cent), respectively; mechanism for speedy clearance of crude palm oil at shipping ports and placing the imports of Refined Bleached Deodorized (RBD) palm oil and RBD palmolein under free category from restricted category effective from

June 30, 2021 and applicable till December 31, 2021. Further, effective September 11, 2021, import duty on crude and refined palm oil was reduced from 10 per cent to 2.5 per cent (effective rate reduced from 30.25 per cent to 24.75 per cent) and 37.5 per cent to 32.5 per cent (effective rate reduced from 41.25 per cent to 35.75 per cent), respectively. However, price pressures continued in the domestic market (barring in July 2021) as Malaysia increased its export reference price for July 2021, maintaining its export duty at the highest rate of 8.0 per cent. To control domestic edible oil prices, import duty on crude soybean and sunflower oil were reduced from 15.0 per cent to 7.5 per cent, effective August 20, 2021 and it was further reduced to 2.5 per cent from September 11, 2021. Similarly, import duty on refined soybean and sunflower oils was reduced from 45.0 per cent to 37.5 per cent and further to 32.5 per cent with the same effective dates. To attain self-sufficiency in production of edible oil, the Government announced a National Mission on Edible Oil - Oil Palm (NMOEO-OP) with an investment of over ₹11,000 crore and assured farmers access to all facilities, from quality seeds to technology.

**Chart II.11: Drivers of Price Pressures in Animal Protein and Oils and Fats**



**Note:** Data for H1:2021-22 pertain to April-August 2021. Figures in parentheses indicate weight in CPI-animal protein group.

**Sources:** NSO and World Bank Pink Sheet.

Price of sugar and confectionery (weight of 1.4 per cent in the CPI and 3.0 per cent in the food and beverages group) remained in deflation during March-August 2021, except for June 2021, due to higher domestic availability as a result of robust production (sugarcane production rose by 7.8 per cent in 2020-21<sup>4</sup> AE over 2019-20 FE) and export subsidy for sugar export under MAEQ (Maximum Admissible Export Quota) being reduced to ₹4000 per tonne from ₹6000 per tonne, effective May 20, 2021.

Among other items in the CPI food group, prices firmed up in the case of non-alcoholic beverages and prepared meals, reflecting increase in input costs.

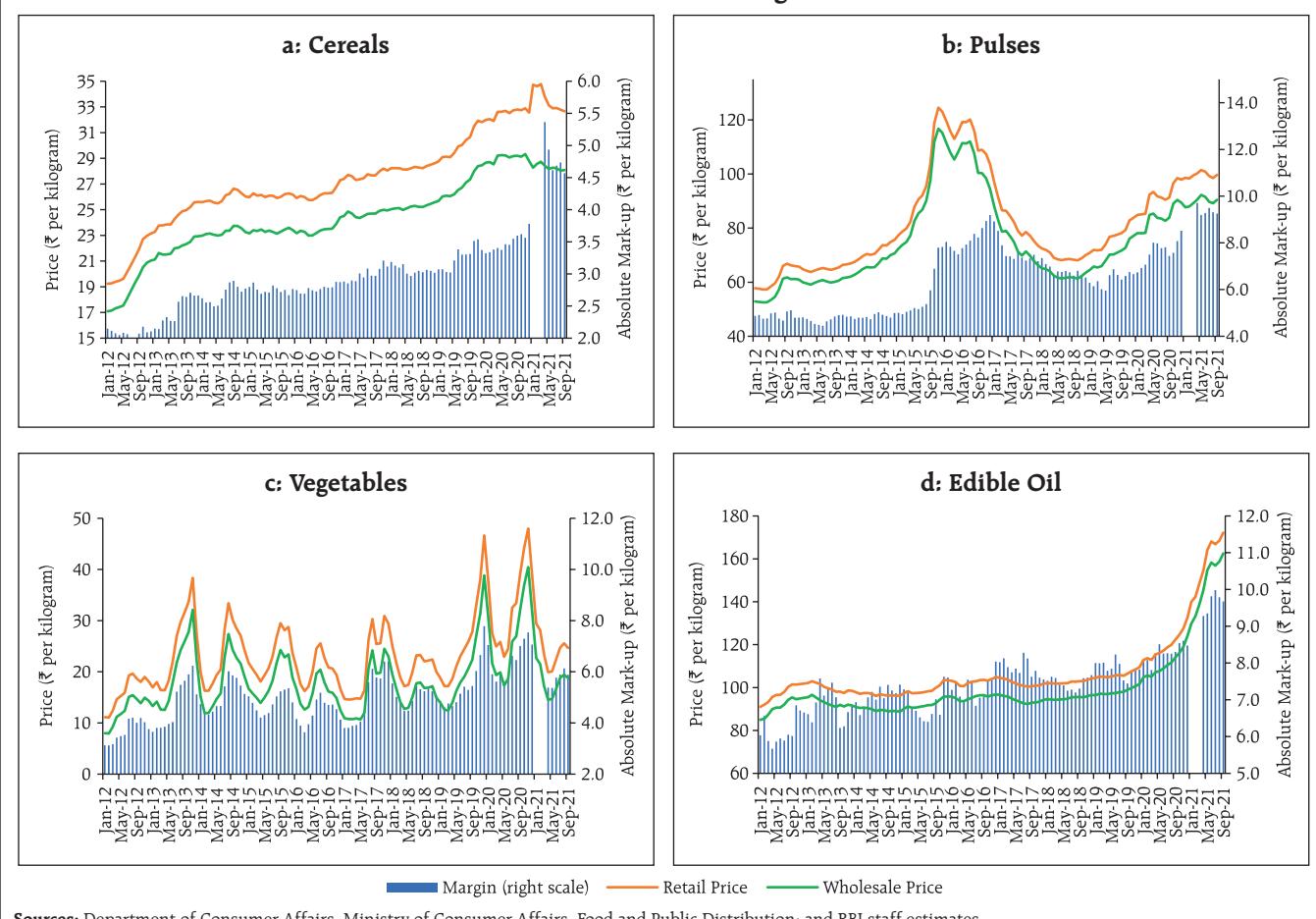
### Retail Margins

Retail price margins, defined as the difference between retail and wholesale prices for four major sub-groups – cereals, pulses, vegetables and edible oil – have shown divergent movements.<sup>13</sup> The margins in case of edible oils, pulses and cereals have risen unceasingly, since the first wave of the COVID-19 pandemic. Margins in case of vegetables are back to the usual seasonal pattern in absence of any major supply side disturbance (Chart II.12).

### CPI Fuel Group

CPI fuel inflation surged from 4.4 per cent in March 2021 to 12.6 per cent in June 2021 before

**Chart II.12: Retail Margins**



<sup>13</sup> Item level retail and wholesale prices sourced from the Department of Consumer Affairs (DCA) are aggregated at respective subgroup 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.

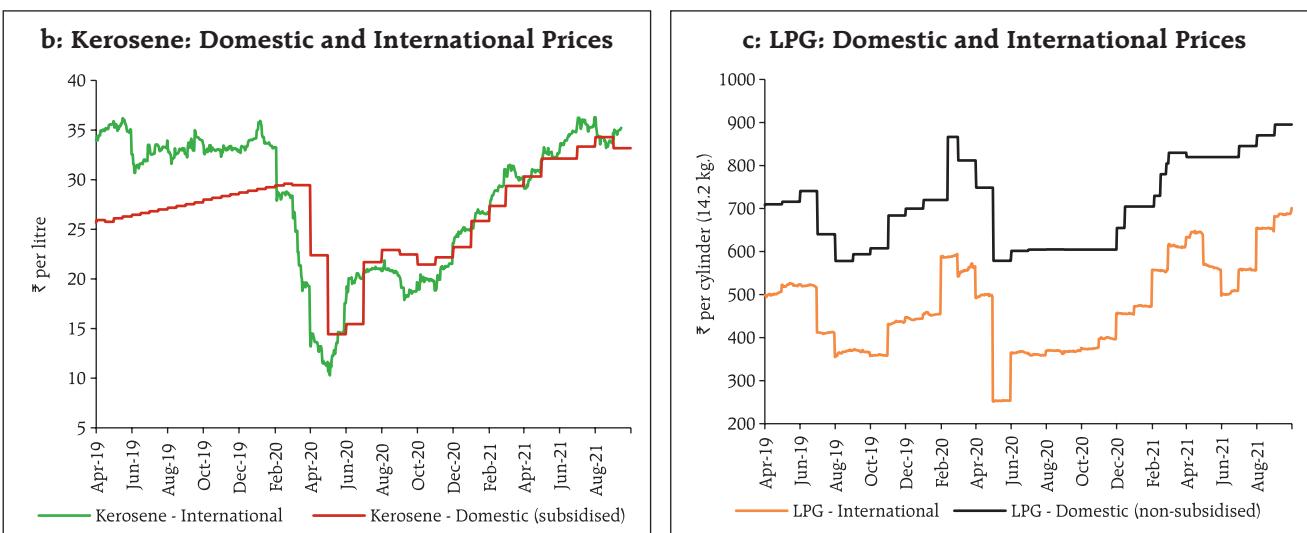
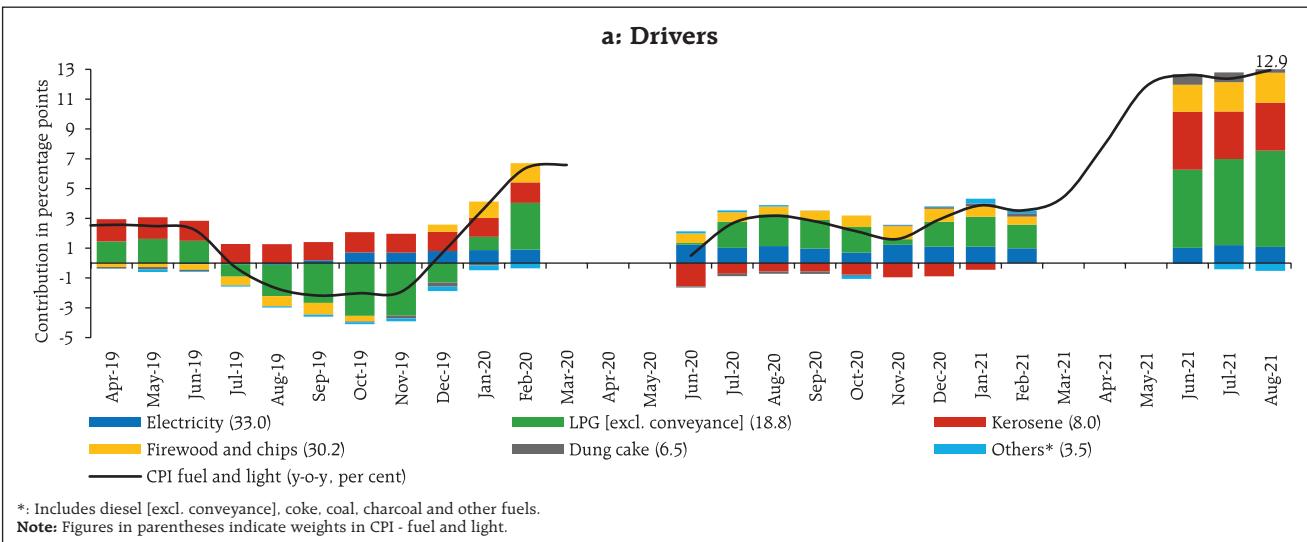
showing a transitory dip in July. In August 2021, fuel inflation touched an all-time high of 12.9 per cent (Chart II.13a). The year-on-year price changes in LPG and kerosene (PDS) during June-August 2021 were one of the highest recorded in the current CPI series. Market prices of crude and various oil-based fuels have firmed up through the waves of the pandemic pulling up kerosene and LPG fuel prices (Chart II.13c).

The contribution of fuel items of rural consumption like firewood and chips was also substantial during June-August 2021 (Chart II.13b and II.13c).

#### CPI excluding Food and Fuel

CPI core inflation, i.e. CPI inflation excluding food and fuel, remained elevated and sticky in the financial year so far, reflecting persistent cost-push pressures

**Chart II.13: 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](http://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 at four metros from Indian Oil Corporation Limited (IOCL).

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

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

Period	CPI excluding food and fuel (47.3)	CPI excluding food, fuel, petrol and diesel (45.0)	CPI excluding food, fuel, petrol, diesel, gold and silver (43.8)
Jun-19	4.1	4.6	4.6
Sep-19	4.2	4.9	4.5
Dec-19	3.8	3.7	3.3
Mar-20	3.9		
Jun-20	5.4	5.3	4.6
Sep-20	5.4	5.2	4.5
Dec-20	5.6	5.3	4.7
Jan-21	5.5	5.2	4.7
Feb-21	6.0	5.5	5.1
Mar-21	5.9		
Apr-21	5.3		
May-21	6.6		
Jun-21	6.1	5.3	5.4
Jul-21	5.8	5.1	5.3
Aug-21	5.8	5.1	5.5

**Note:** (1) Figures in parentheses indicate weights in CPI.

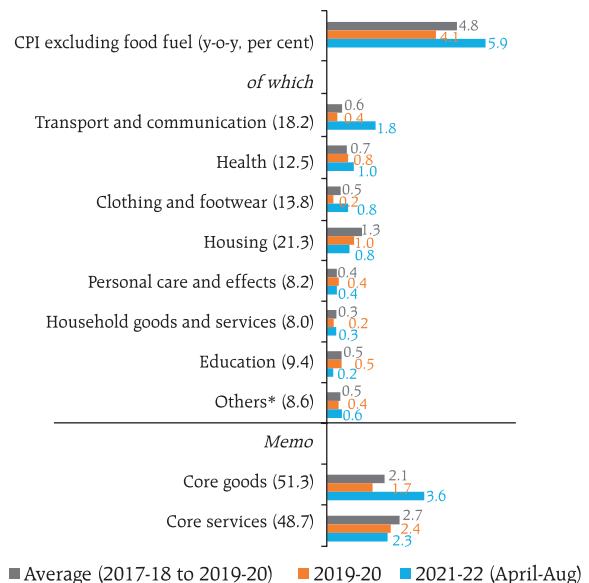
(2) Derived as residual from headline CPI.

**Sources:** NSO; and RBI staff estimates.

even as demand conditions remained sluggish. Core inflation, from a peak level of 6.6 per cent in May, moderated to 6.1 per cent in June and to 5.8 per cent during July-August. Excluding petrol and diesel, it has also remained sticky in the range of 5.1-5.5 per cent throughout the pandemic period (Table II.2).

In term of sub-groups, transport and communication, clothing and footwear and health accounted for more than 60 per cent of core inflation (weight of these sub-groups is around 45 per cent in the core CPI). On the other hand, the contributions of housing and education sub-groups to core inflation in the financial year so far have been lower than in the pre-pandemic period (Chart II.14).

Overall, goods inflation is driving the core, with petrol and diesel (under the transportation and communication sub-group) registering double digit inflation consecutively since July 2020. Even as the one-off effects of indirect taxes instituted in the post-lockdown period waned from June 2021, the sustained increase in international crude oil prices – by around 104 per cent between end-May 2020 and end-August

**Chart II.14: Contribution to CPI excluding Food Fuel (Core) Inflation (in percentage points)**

\* Others include pan, tobacco and intoxicants; and recreation and amusement.

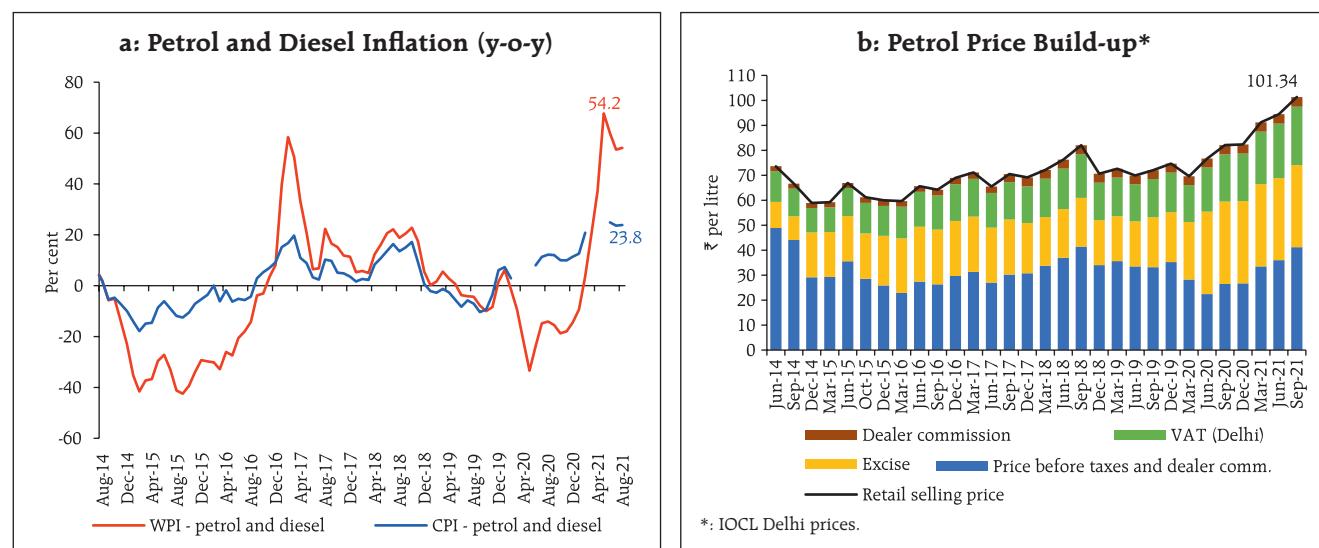
**Note:** Figures in parentheses indicate weights in CPI excluding food and fuel.

**Sources:** NSO; and RBI staff estimates.

2021 – has kept petrol and diesel inflation firm at 23.8 per cent in August. This was starkly evident in the WPI which excluded indirect tax effects; WPI petrol and diesel inflation was at 54.2 per cent in August (Chart II.15a). Petrol pump prices were at historic highs in early 2021 and breached ₹100 per litre by July 2021, with attendant implications for overall cost conditions in the economy (Chart II.15b).

After abstracting the effects of generally volatile items, i.e., food, fuel, petrol, diesel, gold and silver, core inflation rose from 5.1 per cent in February to 5.5 per cent in August, attesting to persistence (Table II.2).

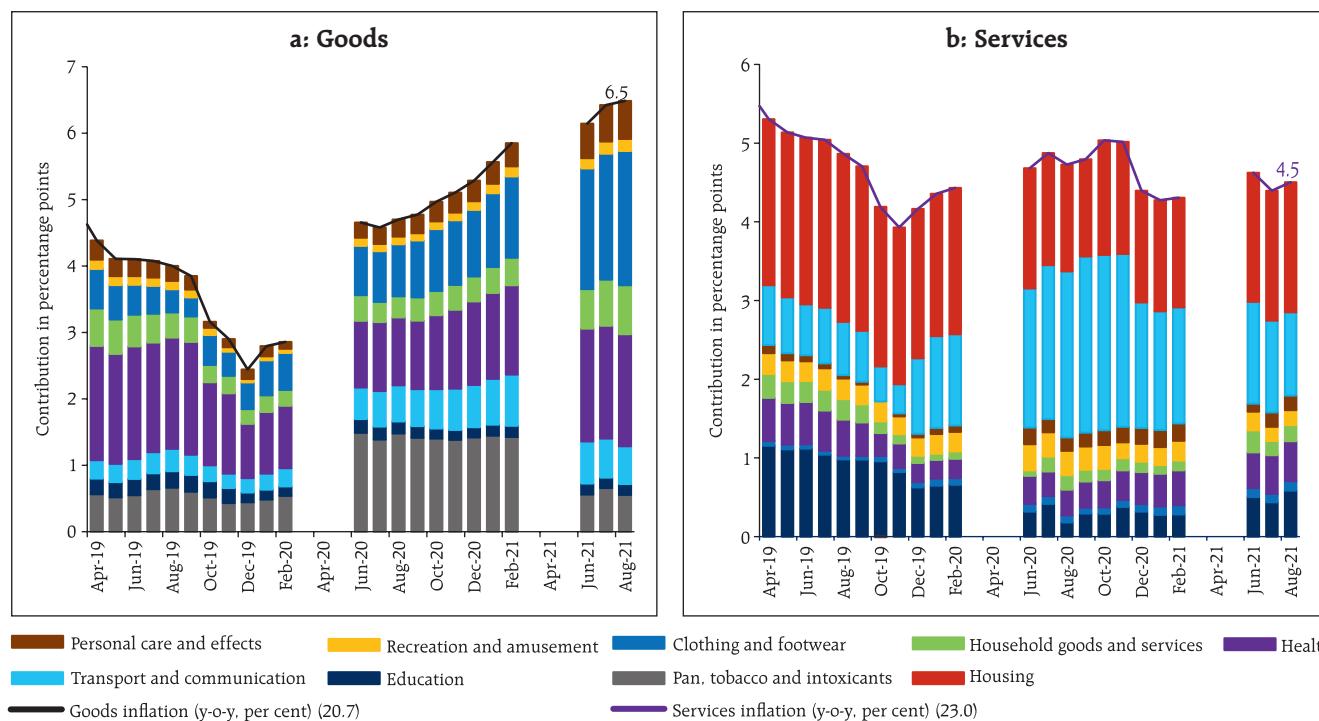
A decomposition of CPI excluding food, fuel, petrol, diesel, gold and silver into goods and services components points to contrasting movements. Inflation in the goods component (with a weight of 20.7 per cent in CPI) has been undergoing consecutive increases from August 2020, reaching 6.5 per cent in August 2021. This was driven primarily by clothing

**Chart II.15: Petrol and Diesel Prices**

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

and footwear, health care – particularly medicines – household goods like utensils, washing soap powder, furniture, personal care items and toiletries

(Chart II.16a). On the other hand, services inflation (with a weight of 23.0 per cent in CPI) which was at 4.3 per cent in February, firmed up moderately to 4.5

**Chart II.16: Contributions to CPI Inflation excluding Food, Fuel, Petrol, Diesel, Gold and Silver**

Note: Figures in parentheses indicate weights in CPI.

Sources: NSO; and RBI staff estimates.

per cent in August 2021. The contribution of services, on an average, to core inflation was somewhat lower than what was seen in the pre-pandemic period (Chart II.14). A recovery in housing rentals along with rising education services inflation from the post-lockdown historic lows are the key drivers for the uptick in core services inflation between February and August 2021, apart from medical as well as household services (Chart II.16b).

In order to filter noise from CPI inflation and get to the underlying inflation dynamics two common approaches are (i) excluding a fixed set of components from the CPI basket that display volatile price movements and are likely to be transitory; and (ii) excluding different components each month if they are located in the tails of the inflation distribution. The exclusion-based measures show heightened inflationary pressures over the last six months with no decisive signs of softening (Table II.2). Inflation measured by trimmed means, on the other hand, shows some edging down of the underlying inflation pressures in August from the June-July peak (Table II.3).

#### *Other Measures of Inflation*

Over the last 14 months, inflation in sectoral CPIs for agricultural labourers (CPI-AL) and rural labourers (CPI-RL) has remained below CPI headline inflation. Lower food inflation, paired with their higher weights in CPI-AL and CPI-RL contributed to the lower CPI-AL and CPI-RL inflation prints. Inflation in terms of the CPI for industrial workers (CPI-IW) fell below the headline during May-August 2021.

WPI inflation registered sharp increases sequentially between February and May 2021 to touch an all-time high of 13.1 per cent (as per the

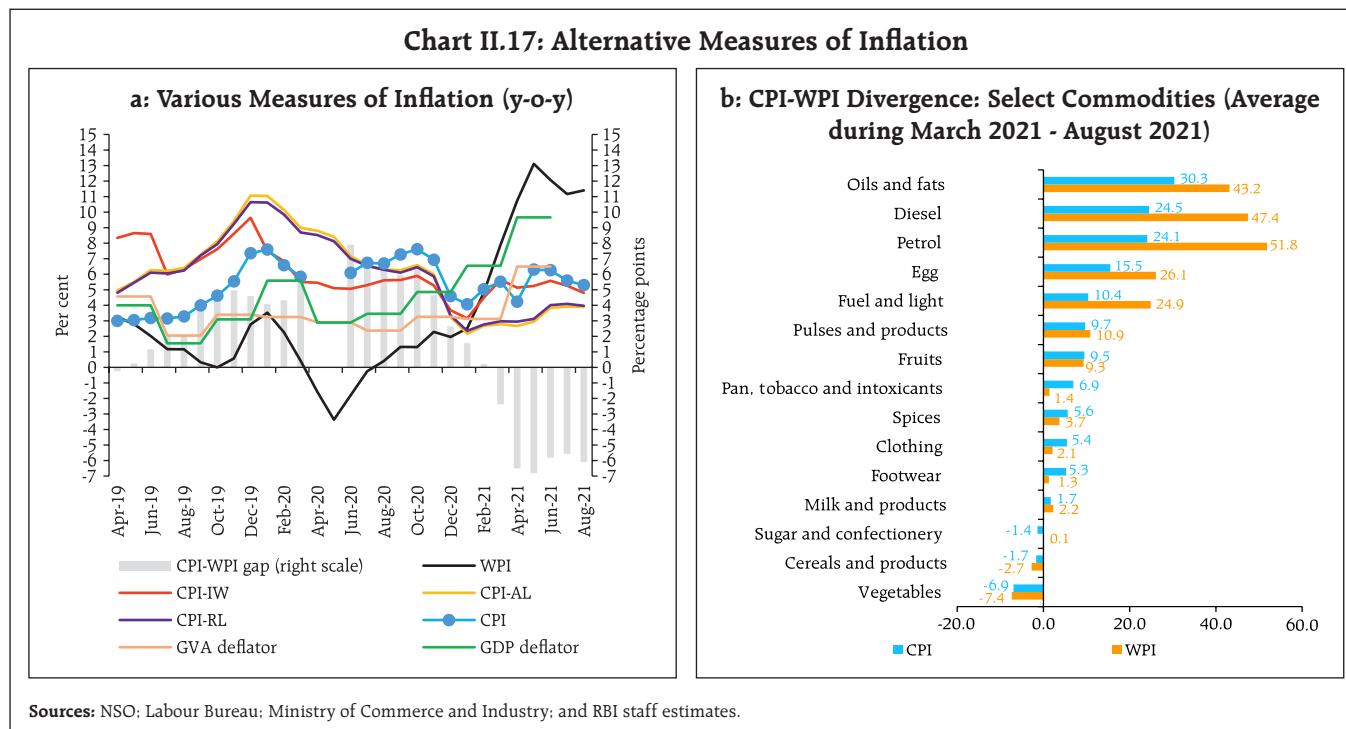
**Table II.3: Trimmed Mean Measures of Inflation (y-o-y)**

Period	5% trimmed	10% trimmed	25% trimmed	Weighted Median
Jun-19	3.0	3.1	3.0	2.8
Sep-19	3.3	3.2	3.1	2.8
Dec-19	4.4	4.0	3.7	4.0
Mar-20				
Jun-20	5.8	5.4	5.1	4.9
Sep-20	6.2	5.6	4.7	5.1
Dec-20	5.6	5.1	4.3	4.0
Jan-21	5.0	4.8	4.0	3.6
Feb-21	5.1	4.9	4.1	3.7
Mar-21				
Apr-21				
May-21				
Jun-21	5.7	5.2	5.0	5.2
Jul-21	5.8	5.3	5.0	4.6
Aug-21	5.5	5.1	4.9	4.3

**Sources:** NSO; and RBI staff estimates.

WPI series, 2011-12=100) in May from a sharp and broad-based upsurge in price momentum in an environment of adverse base effects. WPI inflation moderated in June and July 2021, despite positive price pressures, owing to base effects turning favourable, although it remained in double digits. In August, WPI inflation reversed course and edged up to 11.4 per cent primarily on account of an increase in non-food manufactured products inflation, despite softening of food inflation. In line with WPI inflation, the deflators for gross value added (GVA) and gross domestic product (GDP) edged up sharply between Q3:2020-21 to Q1:2021-22.

WPI inflation has averaged 11.7 per cent during April-August 2021, remaining markedly above CPI inflation (average of 5.5 per cent) (Chart II.17a). Inflation in petroleum products – especially petrol and diesel – eggs and edible oils diverged considerably



between the CPI and the WPI (Chart II.17b). These developments have again brought to fore the

possibility of transmission of WPI inflation to the CPI and their long-run relationship (Box II.2).

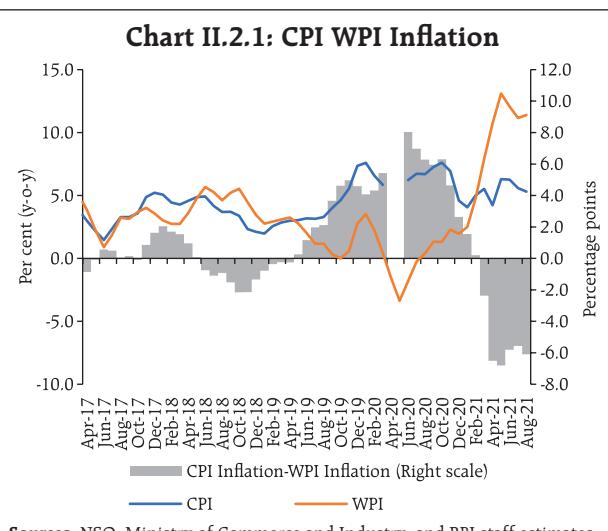
#### Box II.2: CPI-WPI Inflation Post-Lockdown: Long-run Cointegration and Short-run Error Correction

Since the onset of the pandemic in 2020, consumer price and wholesale price inflation rates have been exhibiting considerable divergence, the wedge widening to 6.1 percentage points in August 2021 (Chart II.2.1). This brought to fore the concern – will elevated WPI inflation feed into CPI?

Recent studies have shown that over time and through the course of the pandemic the sensitivity of CPI inflation to WPI inflation has come down (RBI, 2021).

An analysis based on CPI and WPI for the period, April 2012-July 2021, shows that a long-run relationship exists between CPI and WPI<sup>14</sup>. The speed of adjustment is low.

The CPI food index and the WPI food index are cointegrated as well as homogeneous, i.e., they move one-on-one in the long term. CPI core and WPI core are also found to be



cointegrated but the long run coefficient is less than one. While WPI core largely comprises of basic and intermediate

(Contd.)

<sup>14</sup> The long-run relationship between headline CPI and WPI inflation has been disrupted by the pandemic and it holds only after controlling for the pandemic related disruptions.

**Table II.2.1: Cointegration and VECM Estimates for CPI and WPI by Major Groups**

	Overall	Food@	Fuel@	Core@
Johansen Cointegration Test Trace Statistic $H_0$ : No Cointegrating Equation (p-value) # Number of cointegrating vectors	33.00*** (0.005) 1	26.74*** (0.005) 1	2.74 (0.97) 0	30.83** (0.01) 1
Long-run equation	$\ln(CPI)_t = 2.90 + 0.38^{**} \ln(WPI)_t + 0.002^{***} t$	$\ln(CPI)_t = 0.04 + 1.00^{***} \ln(WPI)_t$	Not Applicable	$\ln(CPI)_t = 3.52 + 0.24^{**} \ln(WPI)_t + 0.003^{***} t$
Homogeneity $H_0$ : Long run coefficient = 1 (p-value)	(0.000)***	(0.989)	Not Applicable	(0.000)***
Error correction term in short-run	-0.083***	-0.089**	Not Applicable	-0.078***
<b>Regression Diagnostics:</b>				
Adjusted R <sup>2</sup>	0.211	0.317	Not Applicable	0.430
Breusch-Godfrey LM Test (p-value)	0.213	0.238	Not Applicable	0.112
<b>Conclusions</b>	Cointegrated; not homogeneous	Cointegrated; and homogeneous	Not Cointegrated	Cointegrated; not homogeneous

@ See notes for definitions.

# Maximum eigenvalue statistic gives similar results as Trace statistic.

\*\*\* denotes significance at 1 per cent level, \*\* denotes significance at 5 per cent level and \* denotes significance at 10 per cent level.

**Notes:**

- The sample period for the analysis is April 2012-July 2021. The estimates on cointegration and vector error correction models (VECMs) are based on Johansen System Cointegration test. The homogeneity is tested using student's t-test.
- CPI food is defined as CPI food and beverages. WPI food comprises of WPI food articles, manufactured food products and non-alcoholic beverages.
- CPI fuel comprises of CPI fuel and light, petrol and diesel. WPI fuel is defined as WPI fuel and power.
- CPI core is defined as CPI excluding food, fuel, petrol, diesel and housing. WPI core is defined as WPI non-food manufactured products excluding non-alcoholic beverages.
- COVID-19 related disruptions have been adjusted for by introducing time dummies in the VECMs – a dummy for April 2020 has been included in all four equations and additionally for May 2021 for the core equation. All dummies were found to be significant at 1 per cent level. WPI and CPI with appropriate lags have been included in estimating the short-term error correction equations.

industrial inputs that do not find representation in CPI, CPI core comprises of household goods and services, including housing service, that are not part of WPI (Das and George, 2017). WPI and CPI fuel groups, on the other hand, are not cointegrated (Table II.2.1).

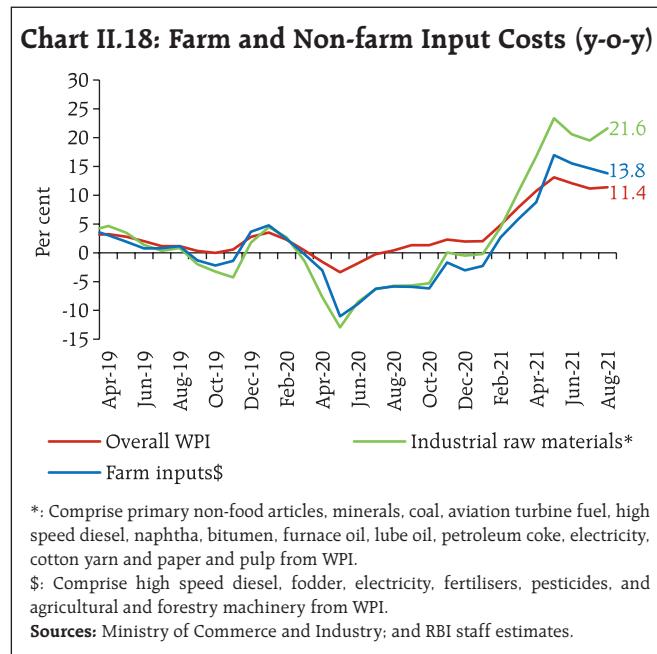
**References:**

- RBI (2021), "State of the Economy", RBI Bulletin, June 2021.  
 Das, P., & George, A. T. (2017), "Comparison of Consumer and Wholesale Prices Indices in India: An Analysis of Properties and Sources of Divergence", RBI Working Paper Series, WPS (DEPR): 05 / 2017.

## II.3 Costs

During H1:2021, costs, as measured by inflation in WPI industrial raw materials and farm inputs, increased (Chart II.18). The firming up of global crude oil prices during 2021 impacted the prices of inputs such as high-speed diesel (HSD), naphtha, aviation turbine fuel (ATF), and furnace oil. Prices of non-food articles also increased during March-August 2021. Prices of fibres and oilseeds edged up as international cotton and soybean prices increased. However, inflation in industrial raw materials eased marginally in July 2021 reflecting easing in prices of minerals, bitumen, paper and pulp, before picking up again in August 2021.

The increase in farm input price inflation was largely driven by double digit inflation in fodder, due to damage to production from excess rains during September-October 2020, and HSD reflecting firming up of global crude oil prices. Fertiliser prices, on a year-on-year basis, edged up moderately during 2021, reflecting increase in international prices. Prices of electricity – a key input in both industrial and farm inputs – remained muted during H1:2021. Price increase of agricultural machinery and implements, on a year-on-year basis, also stayed subdued, although a gradual pass-through of higher manufacturing costs due to rising commodity prices is underway during March-August 2021.

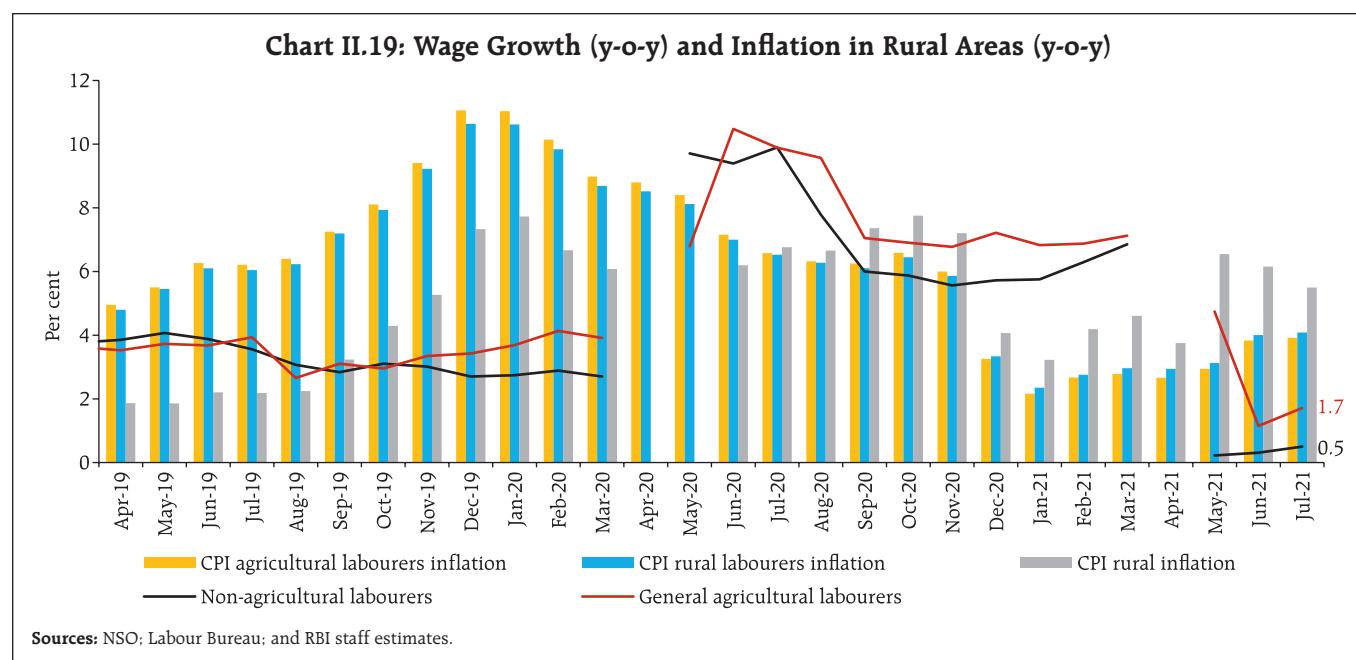


Nominal rural wages for both agricultural and non-agricultural labourers remained stagnant; growth

rates of the nominal rural wages eased sharply, on a year-on-year basis, during May-July 2021, attributable to adverse base effects<sup>15</sup> (Chart II.19).

Growth in the value of production in the organised sector decelerated in contrast to the increase in staff costs for listed firms in the manufacturing sector during Q1:2021-22. In the services sector, staff cost increased sharper than the value of production. As a result, unit labour costs (measured as a ratio of staff cost to value of production) rose from 5.7 per cent in Q4:2020-21 to 6.2 per cent in Q1:2021-22 for firms in the manufacturing sector<sup>16</sup> and from 29.1 per cent to 31.5 per cent for firms in the services sector<sup>17</sup> (Chart II.20).

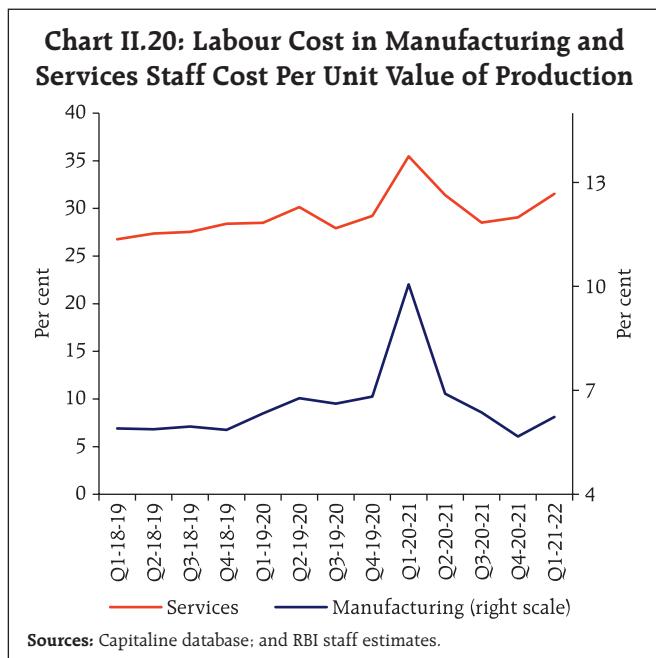
Input cost pressures and salary outgoes are expected to rise in Q3:2021-22 for the manufacturing firms polled in the Reserve Bank's industrial outlook survey. Manufacturers may pass on the cost burden



<sup>15</sup> Rural wages had increased sharply during May-June 2020 reflecting labour shortages during the nationwide lockdown period and the hike in wages by ₹20 under the Mahatma Gandhi National Rural Employment Guarantee (MGNREGA) scheme effective April 1, 2020.

<sup>16</sup> Based on 1,647 manufacturing firms.

<sup>17</sup> Based on 661 services firms.



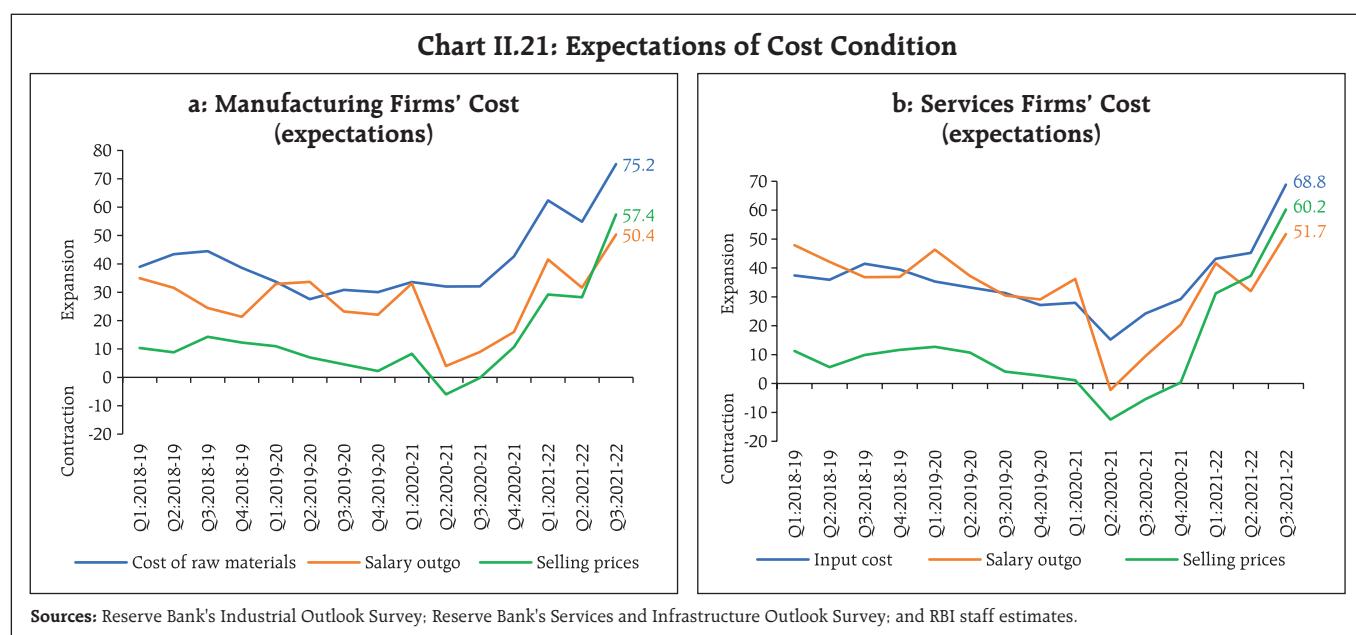
and selling prices are expected to increase in Q3 (Chart II.21a).

The services firms' covered in the Reserve Bank's services and infrastructure outlook survey also expect

input cost pressures as also the cost of finance to harden further going forward. The firms expect these factors to push up the selling prices in Q3 along with increase in salary outgoes (Chart II.21b).

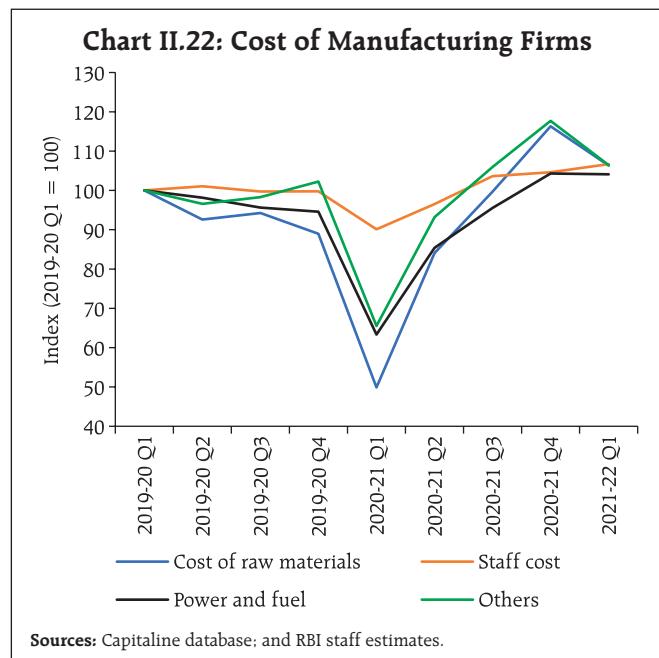
An analysis of the composition of costs among listed non-government non-financial (NGNF) firms<sup>18</sup> reveals that there has been a distinct upward shift in costs for all constituents since the pre-pandemic period (Chart II.22).

Manufacturing firms included in the purchasing managers' index (PMI) also reported increase in input prices, with the pace of increase picking up in September 2021. PMI services firms reported elevated input prices, mainly driven by fuel, raw materials and transportation. In tandem, selling prices also started to tick up, though the pace remained muted. One year ahead business inflation expectations polled by the Indian Institute of Management, Ahmedabad, rose to their highest reading in July before softening somewhat in August.<sup>19</sup>



<sup>18</sup> Based on the abridged quarterly financial results of common companies.

<sup>19</sup> The monthly Business Inflation Expectations Survey (BIES) of the Indian Institute of Management, Ahmedabad, polls a panel of around 1200 business leaders primarily from the manufacturing sector about their inflation expectations in the short and medium term. The latest survey pertains to July 2021.



#### II.4 Conclusion

With inflation expected to moderate in near months, the outlook has improved, and its trajectory

may be shifting downwards in contrast to initial expectations. Active supply-side interventions by the Government in food items, particularly in pulses and edible oils, should bring about a better balance between supply and demand. With cost pressures showing no sign of abating, core inflation remains sticky and elevated. Furthermore, shortage of key industrial components due to stretched global supply chains and logistics is also leading to cost escalation. As demand recovery gathers steam, there is a rising risk of higher input price pass-through to output prices. Measures to ameliorate supply-side cost pressures would be critical at this juncture, especially in terms of a calibrated reduction of the indirect taxes on petrol and diesel. This would help anchor inflation expectations, prevent build-up of a wage-price nexus and provide space for monetary policy to sustain support for the still incomplete growth recovery.

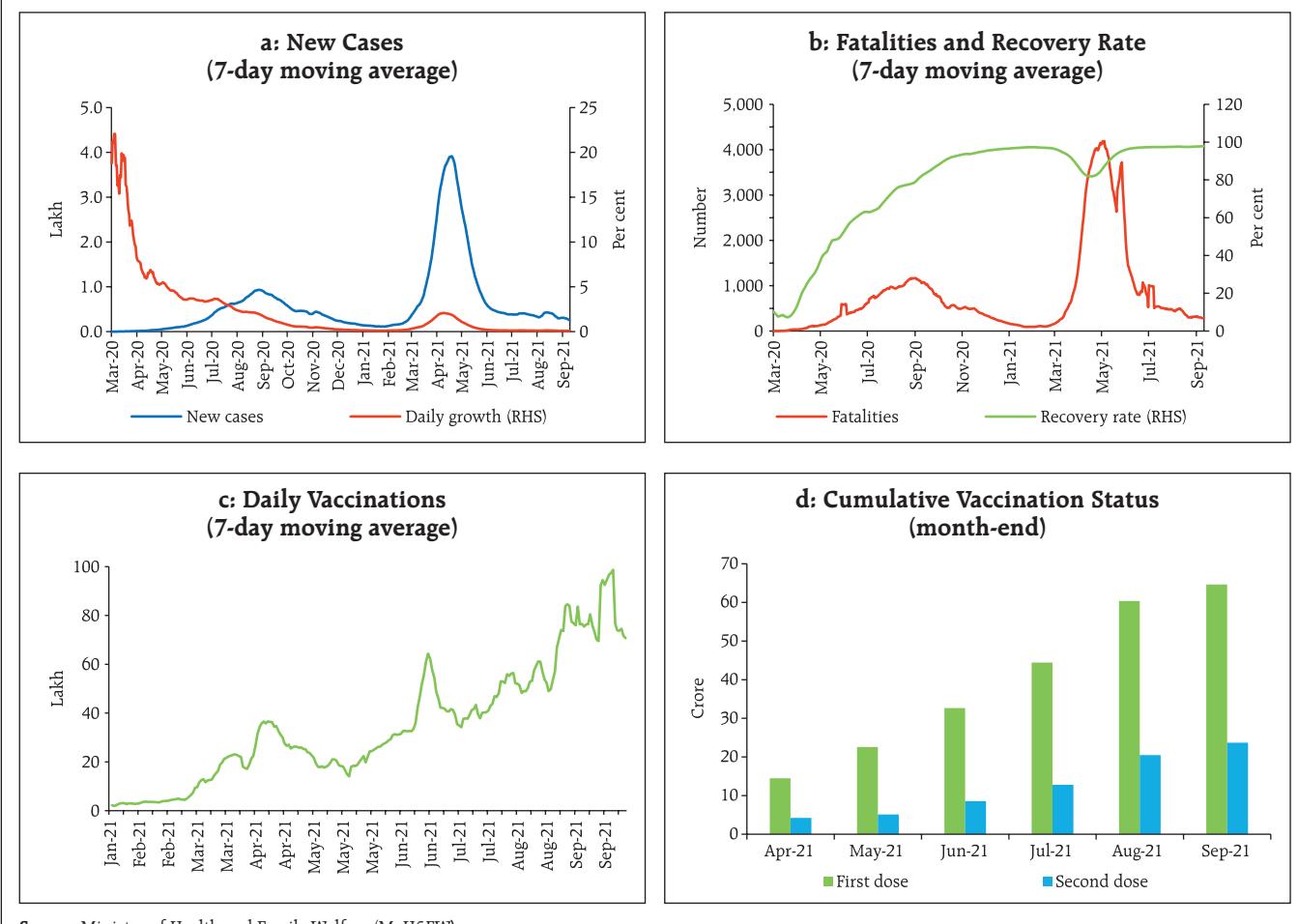
### III. Demand and Output

*While the second wave dented the momentum of economic activity in Q1:2021-22, its impact on aggregate demand was muted relative to the first wave. Aggregate demand recovered in Q2:2021-22 and is expected to strengthen further in H2. The supply side is gradually normalising with the easing of supply chain and logistic disruptions. The recovery, however, remains dependent upon continued policy support, the COVID-19 trajectory and the progress of vaccination.*

Within days of the release of April 2021 MPR, the second wave of COVID-19 intensified and became virulent and lethal, overwhelming the

health infrastructure and denting the momentum of economic activity in Q1:2021-22. The second wave receded as rapidly as it had surged (Chart III.1). Accordingly, the impact on aggregate demand was muted and short-lived relative to the first wave. More nuanced and calibrated containment measures and adaptation by businesses and households to working in a pandemic environment also moderated the headwinds from the second wave. Aggregate demand recovered further in Q2:2021-22, led by investment and private consumption. The recovery is benefitting from pent-up demand supported by the increasing vaccination coverage, the government's push towards capital expenditure, robust external demand and normal monsoon. The

**Chart III.1: COVID Infections and Vaccination**



**Table III.1: Real GDP Growth**

(y-o-y per cent)

Item	2019-20 (FRE)	2020-21 (PE)	Weighted contribution*		2019-20				2020-21				2021-22
			2019-20	2020-21	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
PFCE	5.5	-9.1	3.1	-5.2	7.6	6.5	6.4	2.0	-26.2	-11.2	-2.8	2.7	19.3 (-11.9)
GFCE	7.9	2.9	0.8	0.3	1.8	9.6	8.9	12.1	12.7	-23.5	-1.0	28.3	-4.8 (7.4)
GFCF	5.4	-10.8	1.7	-3.5	13.3	3.9	2.4	2.5	-46.6	-8.6	2.6	10.9	55.3 (-17.1)
Exports	-3.3	-4.7	-0.7	-0.9	3.0	-1.3	-5.4	-8.8	-21.8	-2.0	-3.5	8.8	39.1 (8.7)
Imports	-0.8	-13.6	-0.2	-3.1	9.4	-1.7	-7.5	-2.7	-40.9	-17.9	-5.0	12.3	60.2 (-5.3)
<b>GDP at market prices</b>	<b>4.0</b>	<b>-7.3</b>	<b>4.0</b>	<b>-7.3</b>	<b>5.4</b>	<b>4.6</b>	<b>3.3</b>	<b>3.0</b>	<b>-24.4</b>	<b>-7.4</b>	<b>0.5</b>	<b>1.6</b>	<b>20.1 (-9.2)</b>

**Note:** \*: Component-wise contributions to growth do not add up to GDP growth because change in stocks, valuables and discrepancies are not included. Figures in parentheses are growth rates over Q1:2019-20.

FRE: First revised estimates, PE: Provisional estimate

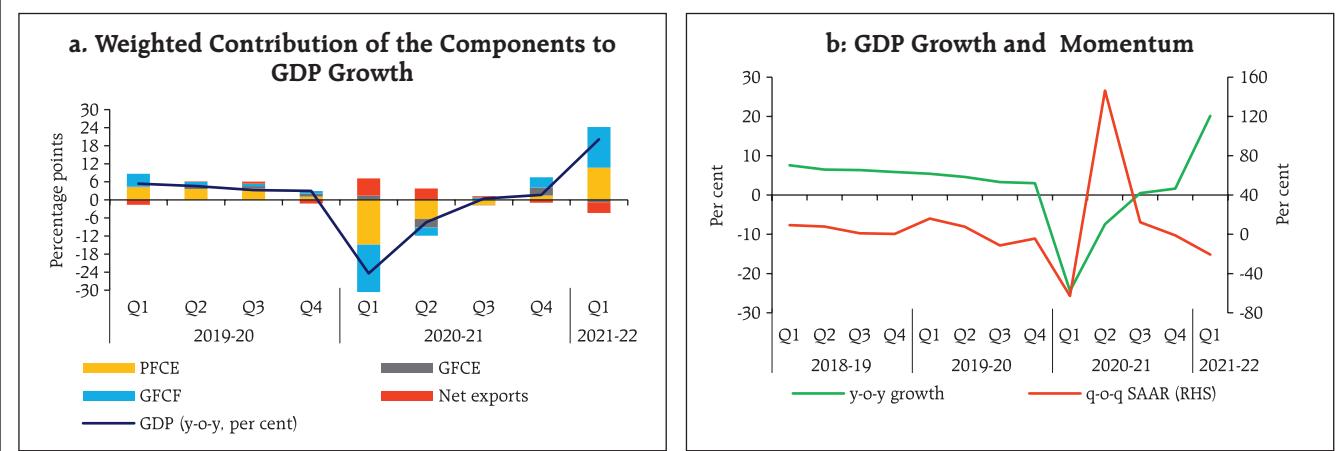
Source: National Statistical Office (NSO).

ongoing demand revival is expected to get a further boost from the government's asset monetisation programme and reforms encompassing the telecom and banking sectors. The supply side is also gradually normalising with the easing of supply chain and logistic disruptions. Agriculture and allied activities remain resilient, backed by above normal kharif sowing. A number of high-frequency indicators are yet to exceed the pre-COVID levels, however, and the

recovery remains dependent upon continued policy support.

### III.1 Aggregate Demand

Despite a loss of momentum in the wake of the severe second wave, real gross domestic product (GDP) rose by 20.1 per cent year-on-year (y-o-y) in Q1:2021-22 on a large favourable base effect (Table III.1 and Chart III.2a), supported by expansion

**Chart III.2: GDP Growth and its Constituents**

Note: SAAR – Seasonally adjusted annualised rate.

Sources: NSO and RBI staff estimates.

in all its constituents except for government final consumption expenditure (GFCE) which contracted. The level of GDP in Q1:2021-22 was, however, still 9.2 per cent below the pre-pandemic (Q1:2019-20) level. Excluding GFCE, real GDP expanded by 25.0 per cent (y-o-y) during Q1. Momentum – the quarter-on-quarter (q-o-q) seasonally adjusted annualised rate (SAAR) of real GDP – fell during Q1:2021-22, however, reflecting the lockdowns/restrictions during the second wave, although the contraction was lower than a year ago with businesses and households adapting better to COVID-19 protocols as well as the sharp tapering in infections (Chart III.2b). Aggregate demand gained momentum in Q2, supported by recovery in private consumption and investment demand.

#### **GDP Projections versus Actual Outcomes**

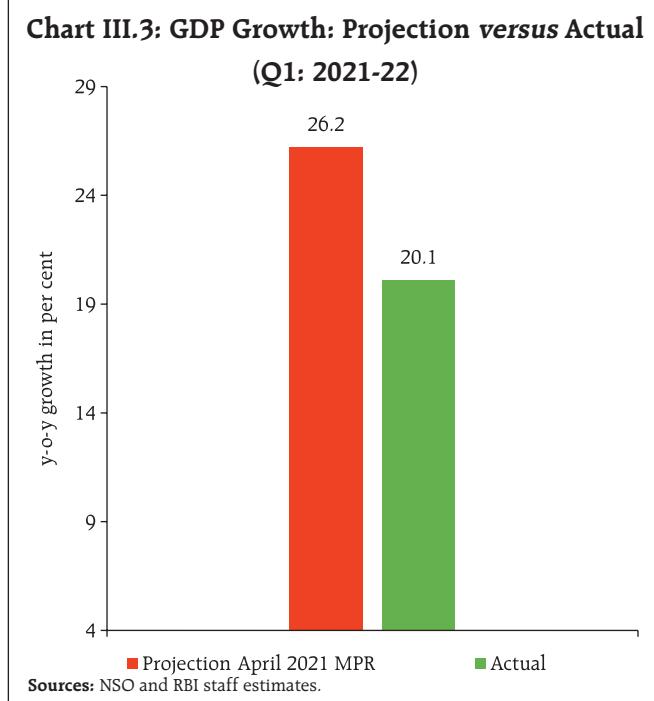
Actual real GDP growth of 20.1 per cent in Q1 undershot the April 2021 MPR projection of 26.2 per cent (Chart III.3), largely reflecting the impact of the steep jump in infections due to the second wave. The April MPR had alluded to the potential surge in infections and new mutants as downside risks to the

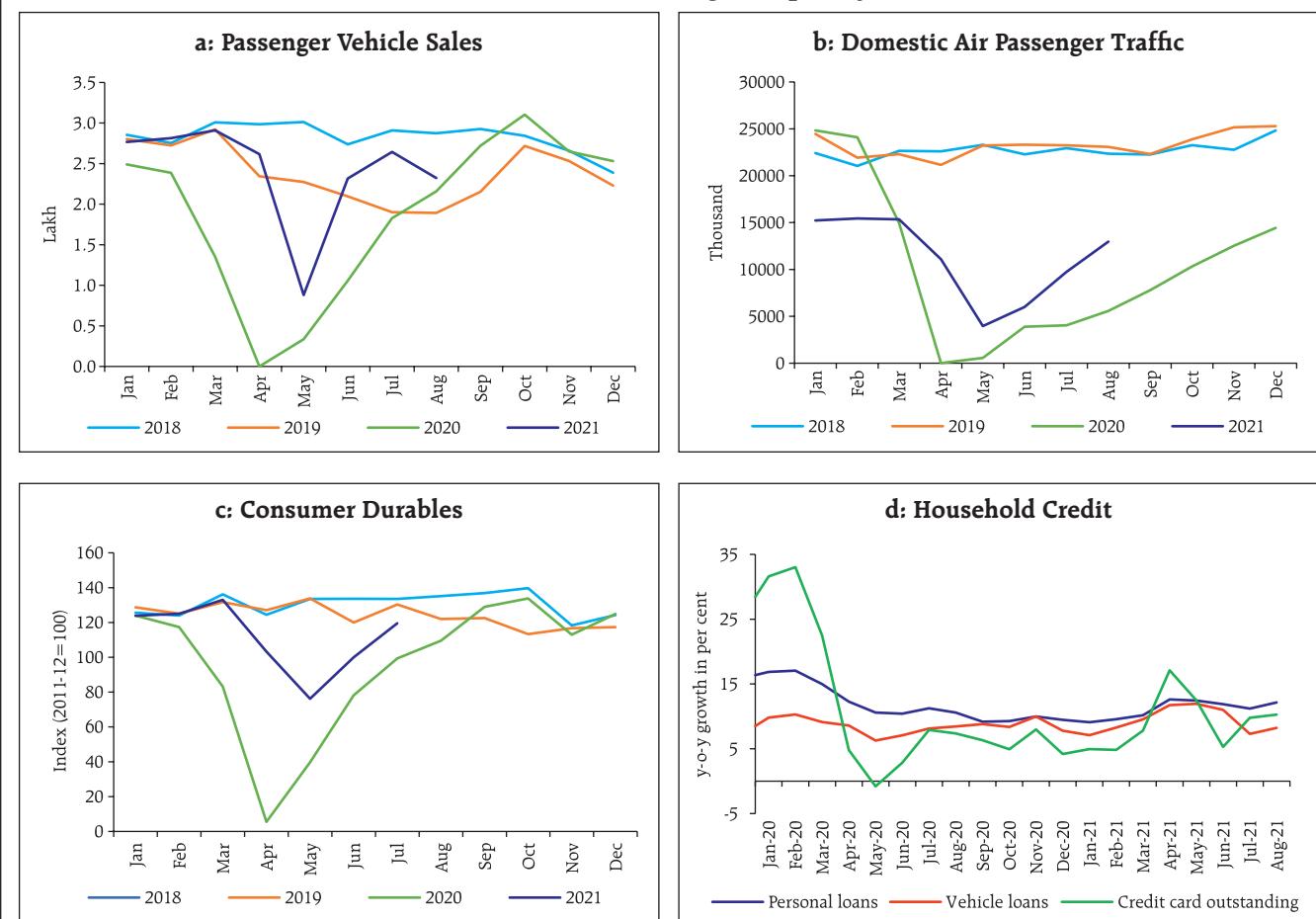
baseline growth path. The decline in the government consumption expenditure also contributed to actual GDP growth trailing projections.

#### **III.1.1 Private Final Consumption Expenditure**

Private consumption, with a share of around 55 per cent in GDP during Q1:2021-22, continued as the mainstay of aggregate demand. Notwithstanding a y-o-y growth of 19.3 per cent, it was around 12 per cent lower than its pre-COVID level (Q1:2019-20). The accelerated pace of vaccination and the plateauing of new infections are facilitating faster resumption of contact-intensive services and giving a fillip to private consumption. Urban demand is turning the corner as corroborated by high frequency coincident and leading indicators for Q2. Passenger vehicle sales in July and August crossed pre-COVID levels (Chart III.4a), but production is facing headwinds from the persistence of global supply bottlenecks in the availability of semiconductor chips. Domestic air passenger traffic and the production of consumer durables regained traction during July and August, *albeit* they are still below pre-COVID levels (Chart III.4b and c). Household credit is gradually improving, driven by credit card transactions and personal loan, supporting consumer durables financing (Chart III.4d). Digital retail payments data, which provide useful signals of economic activity, corroborate the upturn (Box III.1).

Rural consumption demand, which was largely immune to the pandemic during the first wave, was dented during the second wave with the fast spread of infections to rural areas. With the abatement of the second wave and improving vaccinations, rural consumption exhibited recovery in Q2, backed by buoyant *rabi* harvest, good *kharif* prospects, government transfers and the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) programme. The pick-up in motorcycle sales during June-August and the improvement in consumer non-durables underscore this revival (Chart III.5).



**Chart III.4: Urban Demand: High Frequency Indicators**

**Sources:** Directorate General of Civil Aviation (DGCA), Society of Indian Automobile Manufacturers (SIAM); NSO; and RBI.

Tractor sales have exhibited robust growth, remaining above their pre-pandemic levels, although sales dipped in August in the usual seasonal pattern. Fertiliser sales picked up from May, moving in tandem with

2019 levels, although trailing the exceptionally strong growth of last year.

Unemployment rose and labour force participation fell in Q1:2021-22 under the pressure

#### Box III.I: Tracking Macroeconomic Activity using Digital Payments Data

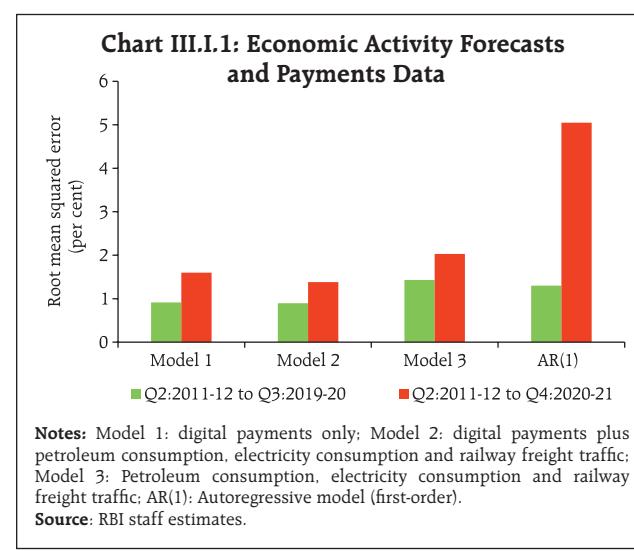
A robust assessment of the current state of the economy and its expected trajectory is critical for the effectiveness of a forward-looking monetary policy. Data on GDP – the comprehensive measure of economic activity – are however, available, with a lag of two months after the end of the reference quarter. Given these data lags and the large and swift exogenous shocks that have been witnessed in the recent years (such as the 2008 global financial crisis and the ongoing COVID-19 pandemic), the interest in new

macroeconomic forecasting tools to nowcast economic activity has become widespread. In this regard, payments data represent a unique source of tracing the underlying economic activity, given their crucial role in undertaking and settling transactions in a market economy. Cross-country empirical evidence suggests that the payments data enhance the accuracy of the nowcasts and short-term forecasts relative to other indicators (Aprigliano et. al., 2019; Bentsen et. al., 2021).

(Contd.)

India has state-of-the-art payments infrastructure and products and there is a wider adoption of digital payments (Das, 2021). The share of digital transactions in the total volume of non-cash retail payments stood at 98.5 per cent during 2020-21. The width and the depth of the banking system, the enhanced policy focus on promoting digital payments and the relatively quick availability of such data make them valuable for nowcasting GDP in the Indian context. A preliminary analysis shows that, amongst the various modes of digital retail payments, the volume of transactions through the following three channels – ATMs, credit cards and debit cards – has a high correlation with GDP (0.95 for the period Q1:2011-12 to Q4:2020-21). The dynamics are further explored through alternate autoregressive distributed lag (ARDL) model specifications with the following variables: real GDP, digital payments volumes (as defined above), and select real economy indicators having a strong association with output (namely, petroleum consumption, electricity consumption and railway freight traffic) as control variables<sup>1</sup>.

To assess the role of the payments data relative to the competing variables, three model specifications are attempted. Model 1 includes data only on digital payments; Model 2 augments payments data with the control variables; Model 3 drops the payments data and includes only the three control variables. Given the large disruptions to the economic activity from the unprecedented COVID-19 pandemic and to evaluate the relative forecasting performance, the models are estimated initially for the pre-COVID period (Q2:2011-12 to Q3:2019-20) and subsequently for the sample including the COVID period (Q2:2011-12 to Q4:2020-21). The estimates indicate that the forecasts of the baseline model with payments

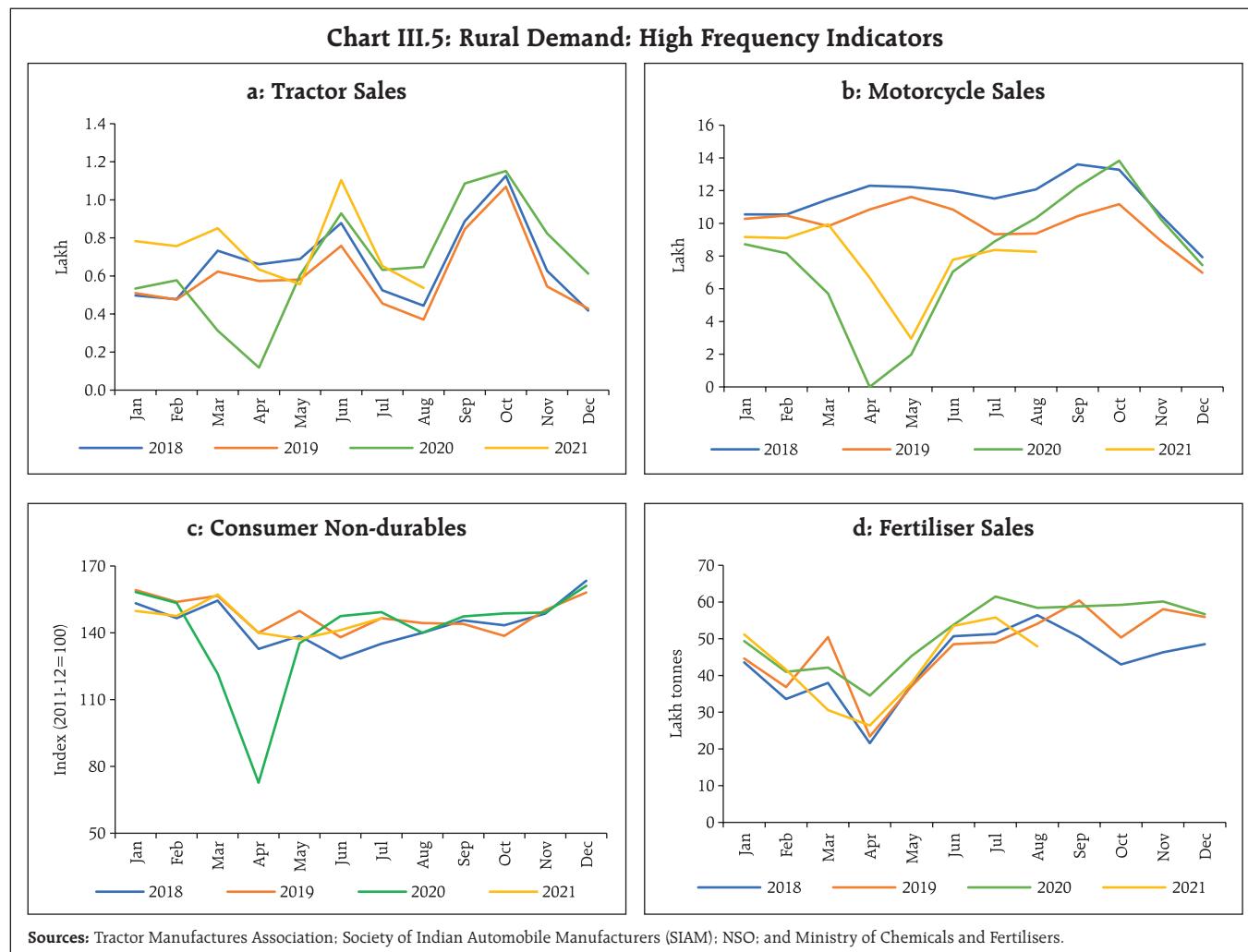


data (Model 1) outperform the specification which does not include payments data (Model 3) and also upon the benchmark AR(1) model (Chart III.1.1). Payments data thus add value to the forecasting toolkit and mixed frequency modelling approaches can provide monthly updates of the evolving output dynamics. The fast pace of the innovations in the payments technology and the rapid shifts in the payments habits of economic agents need ongoing refinements in the modelling approaches.

#### References:

- Aprigliano, V., G. Ardizzi and L. Monteforte (2019), "Using Payment System Data to Forecast Economic Activity", *International Journal of Central Banking*, 15(4), 55-80.
- Bentsen, K.N., D. Gorea (2021), "Nowcasting and Forecasting Economic Activity in Denmark using Payment System Data", Denmark Nationalbank Working Paper.
- Das, Shaktikanta (2021). Financial Inclusion – Past, Present and Future, RBI Bulletin, August.

<sup>1</sup> Unit root tests suggest that all variables are non-stationary ( $I(1)$ ). Bounds test (F-statistics) confirm cointegration for all the specifications at 5 per cent significance level. Data are in log terms and adjusted for seasonality; the variable lags are based on the Bayesian information criterion (BIC) and the regression diagnostics are satisfied.



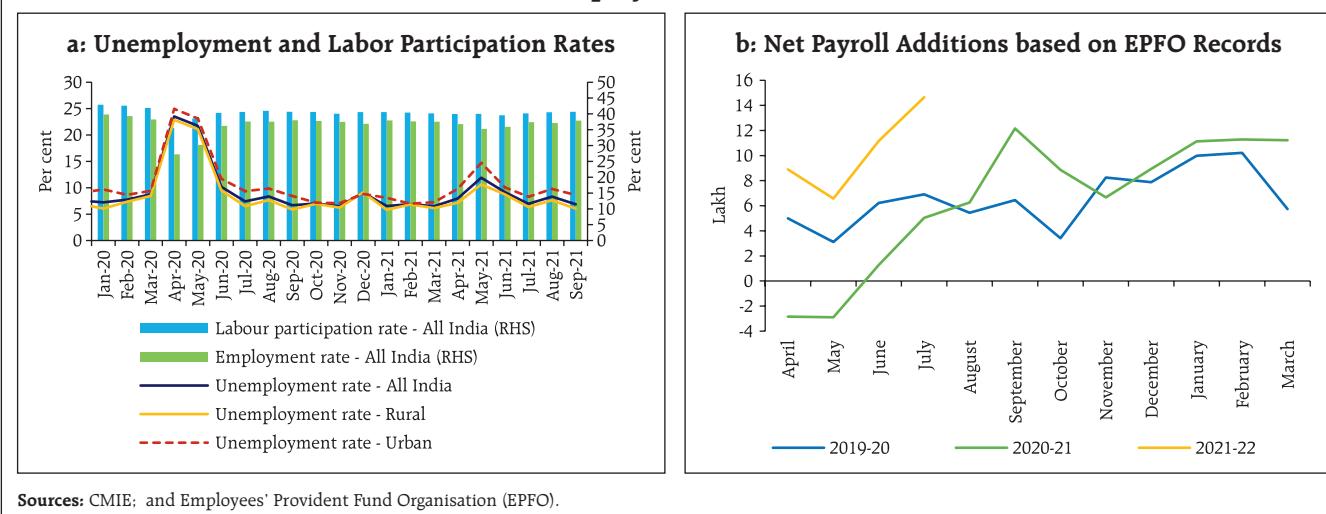
of the second wave, but the impact was muted compared to the first wave. According to the Centre for Monitoring Indian Economy (CMIE), there was a deep hit to labour markets in mid-May at the peak of the second wave. Employment recovered swiftly in June-July and strengthened in September (Chart III.6a). In September, labour participation further rose with the phased opening up of the economy leading to rising demand for labour. Employment conditions improved in June and July 2021 in the organised sector, according to payrolls data (Chart III.6b). Increase in hirings is led by the IT sector, while non-IT sectors such as education, banking, financial, insurance, hospitality and automobile

sector have also shown strong recovery recently, according to Naukri Jobspeak data.

### III.1.2 Gross Fixed Capital Formation

Gross fixed capital formation (GFCF) expanded by 55.3 per cent (y-o-y) in Q1 (contraction of 46.6 per cent a year ago). Sequentially, there was a dip of 23.6 per cent in Q1 despite robust government capex. The share of GFCF in aggregate demand inched up to 31.6 per cent in Q1 from 24.4 per cent a year ago but remained lower than its pre-pandemic level. Construction activity, a large portion of GFCF, was subdued due to pandemic effects, especially led by labour and materials shortages, although the impact was less than during the first wave. There are signs of

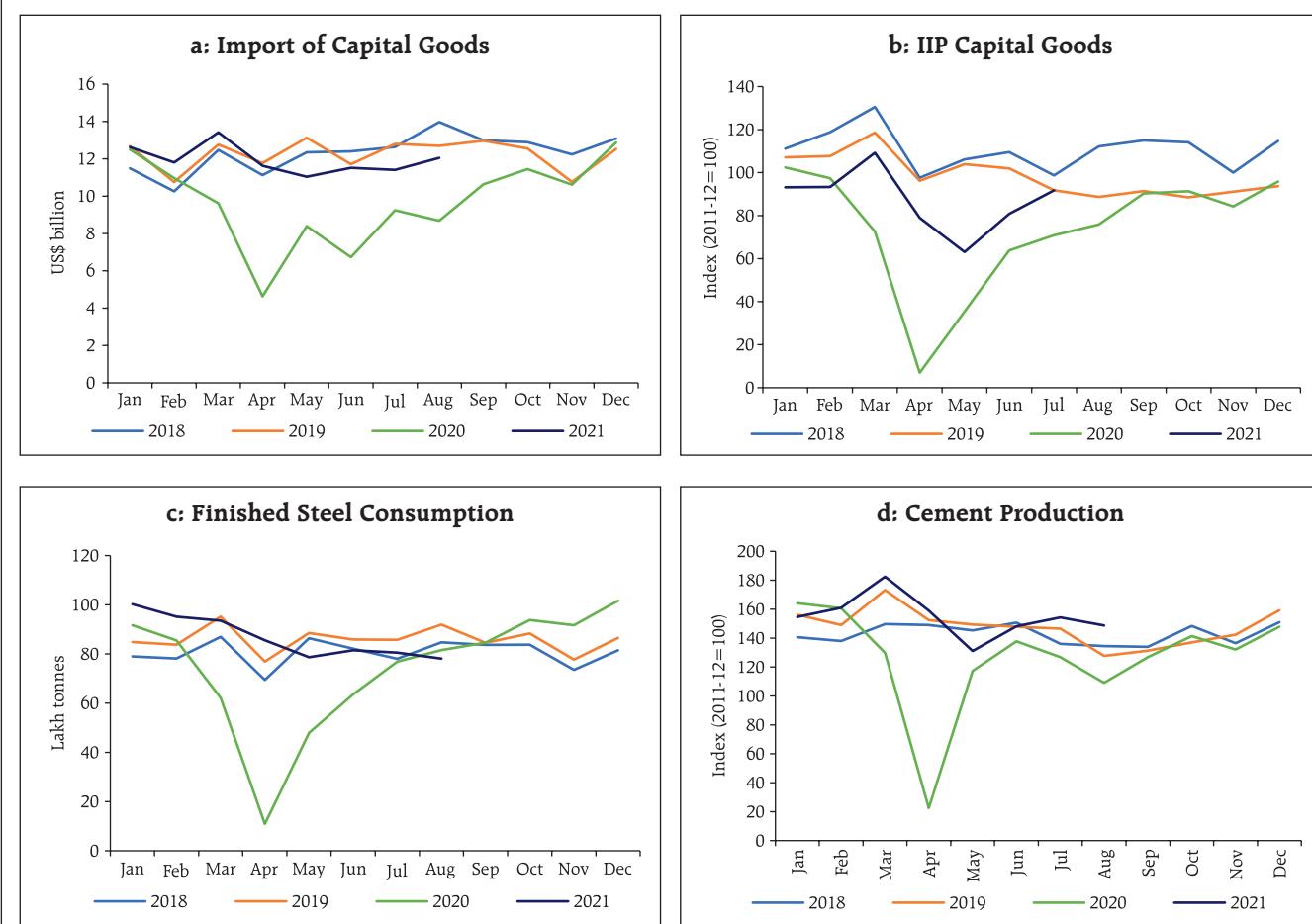
### Chart III.6: Employment Situation in India

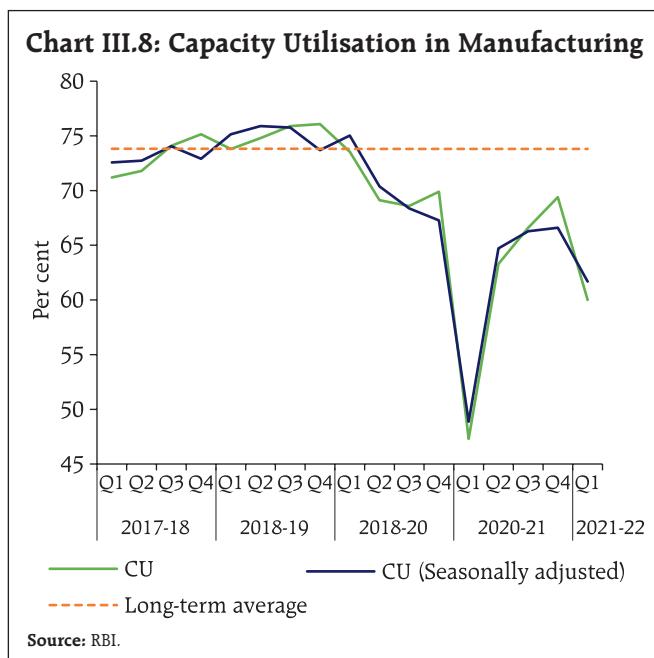


revival in investment demand in Q2, as suggested by the movements in the proximate indicators – capital

goods imports; production of capital goods; and cement production (Charts III.7).

### Chart III.7: Indicators of Investment Demand

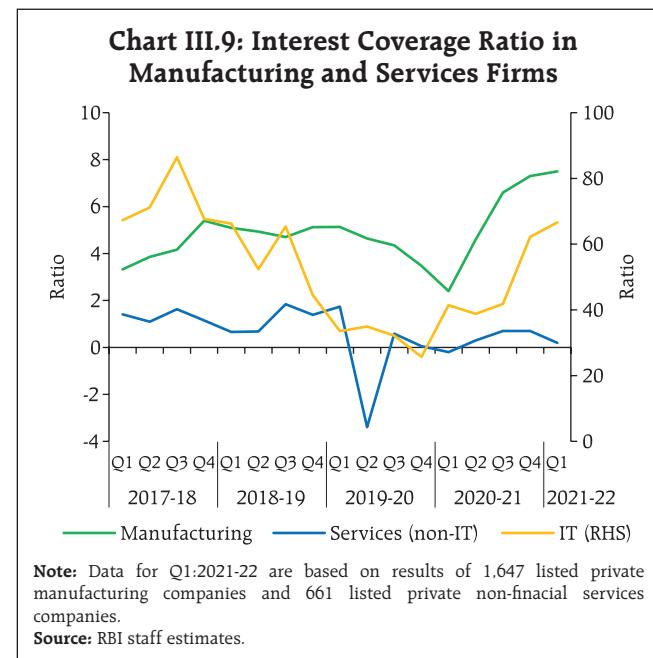




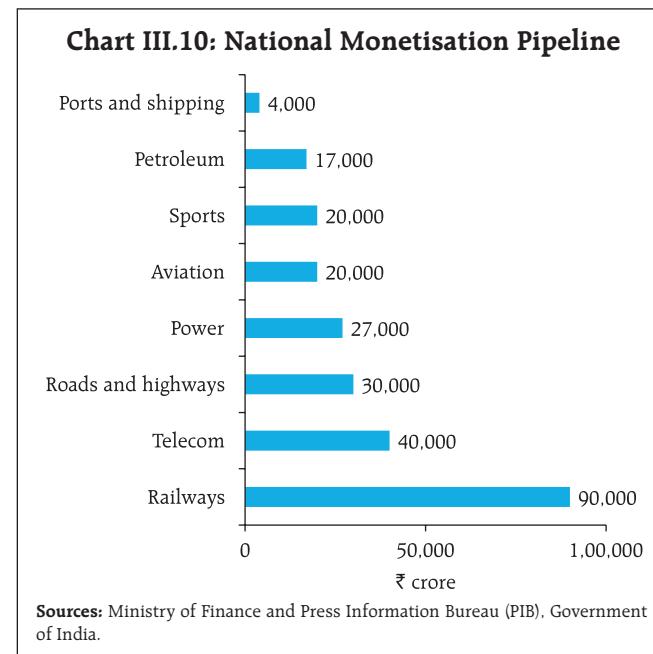
Capacity utilisation (CU) in the manufacturing sector dropped to 60.0 per cent in Q1:2021-22 from 69.4 per cent in the previous quarter (Chart III.8). On a seasonally adjusted basis, CU fell from 66.7 per cent in Q4 to 61.7 per cent in Q1.

The interest coverage ratio (ICR)<sup>2</sup> of listed non-financial private companies in the manufacturing and information technology (IT) sectors improved further in Q1:2021-22, indicating improved debt servicing capacity and hence, conducive conditions for the expansion in investment activity (Chart III.9).

The production-linked incentive (PLI) scheme is nurturing private investment. The mega schemes, viz. National Infrastructure Plan (NIP) amounting to ₹100 lakh crore and National Monetisation Pipeline (NMP) involving ₹6 lakh crore (Chart III.10), are also expected to give a major thrust to infrastructure spending and uplift potential output. The NMP, which will be co-terminus with the balance NIP period (2021-22 to 2024-2025), is expected to unlock the value of investments in brownfield public sector



assets by tapping institutional and long-term capital and by leveraging further public investments. The central government's financial assistance to the state governments for infrastructure spending and incentives for disinvestment/monetisation in the form of additional allocation equivalent to 33 per cent of value of the monetised assets, subject to the



<sup>2</sup> 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.

**Table III.2: Budgetary Position of the Central Government**

Item	(₹ thousand crore)				(Per cent)			
	Budget estimates		Actuals		Per cent to BE		Growth rate	
	2020-21	2021-22	Apr-Aug 2020	Apr-Aug 2021	Apr-Aug 2020	Apr-Aug 2021	Apr-Aug 2020	Apr-Aug 2021
1. Revenue receipts	2,020.9	1,788.4	370.6	793.5	18.3	44.4	-38.6	114.1
2. Tax revenue (Net)	1,635.9	1,545.4	284.5	644.8	17.4	41.7	-29.7	126.7
3. Non-tax revenue	385.0	243.0	86.1	148.7	22.4	61.2	-56.6	72.6
4. Non-debt capital receipts	225.0	188.0	6.7	15.2	3.0	8.1	-63.5	127.8
5. Total receipts (1+4)	2,245.9	1,976.4	377.3	808.7	16.8	40.9	-39.3	114.3
6. Total expenditure (7+8)	3,042.2	3,483.2	1,247.7	1,276.7	41.0	36.7	6.2	2.3
7. Revenue expenditure	2,630.1	2,929.0	1,113.2	1,104.8	42.3	37.7	7.1	-0.8
8. Capital expenditure	412.1	554.2	134.4	171.9	32.6	31.0	-1.3	27.8
9. Revenue deficit (7-1)	609.2	1,140.6	742.6	311.3	121.9	27.3	70.3	-58.1
10. Gross fiscal deficit (6-5)	796.3	1,506.8	870.3	468.0	109.3	31.1	57.1	-46.2
11. Gross primary deficit	88.1	697.1	632.7	189.6	717.9	27.2	89.0	-70.0

Source: Controller General of Accounts (CGA).

realised amount being used for capital expenditure, should also provide an impetus to capital expenditure.

### III.1.3 Government Expenditure

Government final consumption expenditure (GFCE) contracted by 4.8 per cent in Q1:2021-22, partly due to the base effect. Revenues – both tax and non-tax – remained robust. The fiscal position of the central government accordingly strengthened during April-August 2021 and the gross fiscal deficit (GFD) and the revenue deficit (RD) at 31.1 per cent and 27.3 per cent of the budget estimate (BE), respectively,

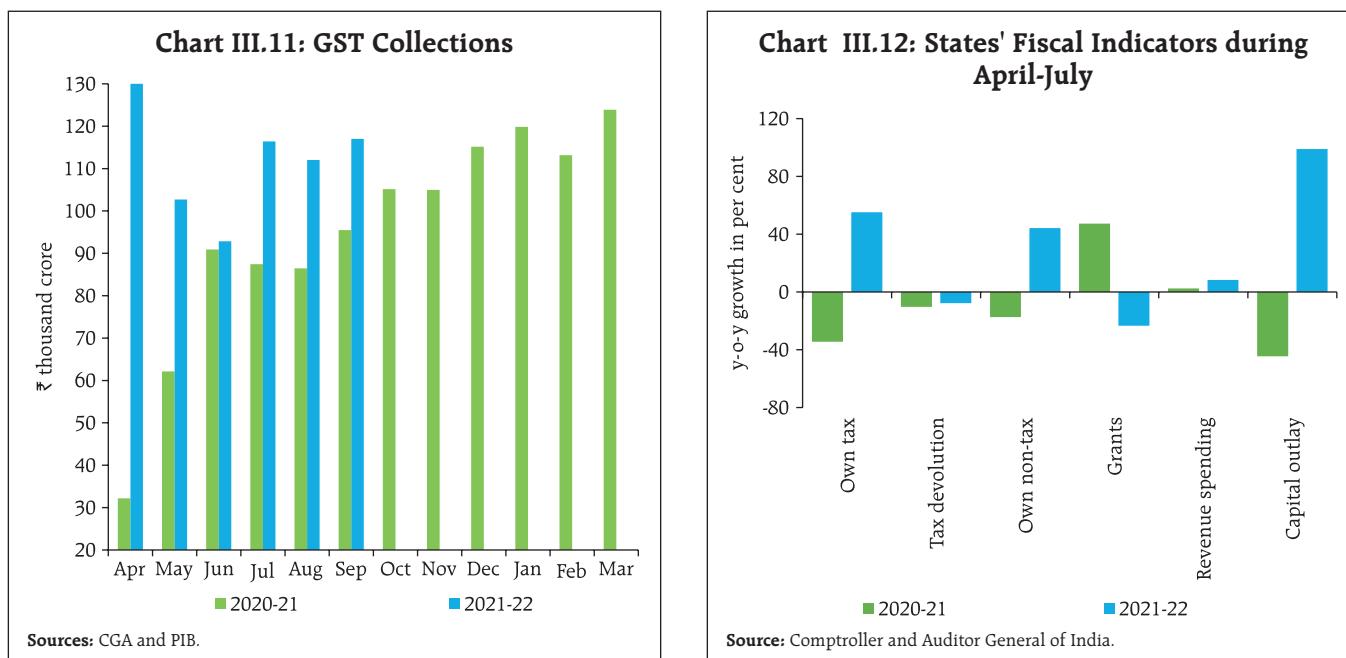
were lower than past trends (Table III.2). Though the first supplementary demands for grants for 2021-22 presented in July involved gross additional expenditure of ₹1,87,202 crore, the net cash outgo amounts to only ₹23,675 crore or 0.12 per cent of GDP.

The buoyancy in the central government's tax revenue during April-August 2021 was driven by higher corporate taxes (on the back of strong corporate performance) and customs duties (due to higher import demand and improving trade activity) (Table III.3). Excise duty collections benefitted from

**Table III.3: Central Government's Tax Collections**

Item	₹ thousand crore				Per cent			
	Budget Estimates		Actuals		Per cent to BE		Growth Rate	
	2020-21	2021-22	Apr-Aug 2020	Apr-Aug 2021	Apr-Aug 2020	Apr-Aug 2021	Apr-Aug 2020	Apr-Aug 2021
A. Direct taxes Of which	1,319.0	1,108.0	187.3	376.2	14.2	34.0	-33.3	108.0
1. Corporation tax	681.0	547.0	64.7	168.1	9.5	30.7	-41.8	159.7
2. Income tax	625.0	548.5	117.7	199.4	18.8	36.4	-28.9	69.3
B. Indirect Taxes Of which	1,104.0	1,109.1	316.9	483.4	28.7	43.6	-16.6	52.6
1. Total GST	693.5	633.3	182.4	266.9	26.3	42.1	-23.9	46.3
2. Custom duties	138.0	136.0	32.3	76.2	23.4	56.0	-47.9	136.0
3. Union excise duties	267.0	335.0	100.4	137.2	37.6	41.0	32.0	36.7
C. Gross tax revenue	2,423.0	2,217.1	504.2	859.6	20.8	38.8	-23.7	70.5
D. Assignment to States/UTs	784.2	665.6	218.0	212.6	27.8	31.9	-14.7	-2.5
E. Net tax revenue	1,635.9	1,545.4	284.5	644.8	17.4	41.7	-29.7	126.7

Sources: Union Budget Documents and Controller General of Accounts.



higher global crude oil prices. Goods and services tax (GST) collections received a jolt from the second wave during May and June but recovered rapidly in the subsequent period (Chart III.11). Overall, direct taxes rose by 101.4 per cent y-o-y (32.8 per cent over the corresponding period of 2019-20), while indirect taxes surged by 52.5 per cent (27.2 per cent over the corresponding period of 2019-20). Non-tax revenue also registered healthy growth, boosted by higher surplus transfer by the Reserve Bank.

On the expenditure side, revenue expenditure contracted marginally by 0.8 per cent y-o-y during April-August 2021 (although higher by 6.3 per cent over the pre-pandemic level), partly due to the frontloading of expenditures a year ago necessitated by the first wave of the pandemic and also efforts to curtail avoidable spending. Spending on major subsidies, however, increased by 12.8 per cent y-o-y (lower by 22.2 per cent compared to the same period of 2019-20), with the extension of the schemes put in place last year to provide free ration to more than 80 crore people under the *Pradhan Mantri Garib Kalyan Anna Yojana* to mitigate the impact of COVID-19. The

central government's capital expenditure increased by 27.8 per cent y-o-y during April-August 2021 (and 26.2 per cent over pre-COVID level), driven by outlays towards road transport and highways.

Available information for 18 states indicates that their GFD in April-July 2021 (as per cent to full year budget estimates) was lower than a year ago on the back of a surge in revenue receipts led by own tax and non-tax revenues, even as transfers from the Centre contracted (Chart III.12).<sup>3</sup> Subsequent to the 43<sup>rd</sup> meeting of the GST Council, it was decided that the Centre would borrow ₹1.59 lakh crore from the market through a special window for 2021-22, which would be passed on to states as back to back loans; of this, an amount of ₹75,000 crore has been transferred to states. Furthermore, ₹81,179 crore of the GST compensation overdues of the last year are also expected to be transferred this year. Both revenue and capital expenditure of the states picked up during

<sup>3</sup> Following the deterioration in key fiscal indicators in 2020-21, 27 states budgeted a lower consolidated GFD at 3.4 per cent of GDP for 2021-22, driven by higher revenues.

**Table III.4: Government Market Borrowings**

(₹ crore)

Item	2019-20			2020-21			2021-22 (up to end-September)		
	Centre	States	Total	Centre	States	Total	Centre	States	Total
Net borrowings	4,73,972	4,87,454	9,61,426	11,43,114	6,51,777	17,94,891	5,63,100	2,35,741	7,98,841
Gross borrowings	7,10,000	6,34,521	13,44,521	13,70,324	7,98,816	21,69,140	7,02,357	3,08,972	10,11,329

**Sources:** Government of India; and RBI staff estimates.

April-July 2021 – the latter expanded sharply by 99 per cent, more than offsetting the contraction of 45 per cent a year ago.

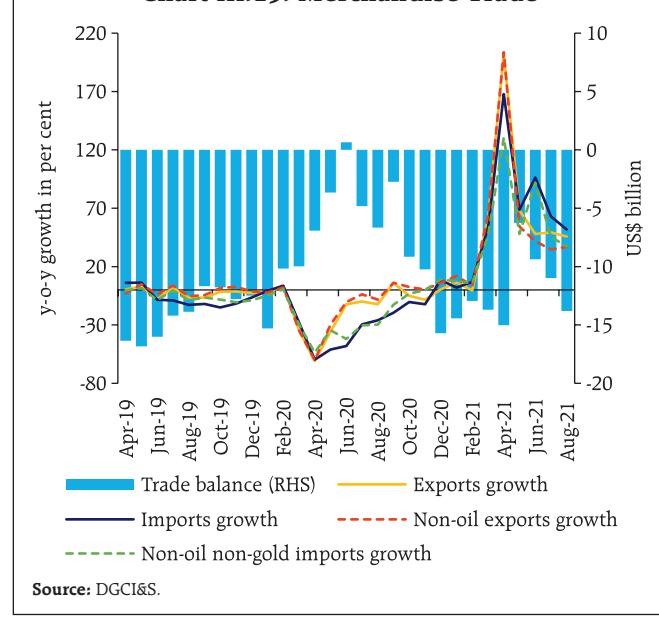
The Union Budget 2021-22 projected gross and net market borrowings at ₹12.05 lakh crore and ₹9.24 lakh crore, respectively. The centre's gross issuances of market borrowings during the first half were ₹7.02 lakh crore (58.3 per cent of the full year budgeted amount) as against ₹7.24 lakh crore envisaged in the calendar for H1 (Table III.4). The weighted average cost and maturity of issuances during H1:2021-22 were 6.19 per cent and 16.7 years, respectively (5.8 per cent and 14.8 years in the same period of 2020-21). For H2:2021-22, the centre's gross market borrowings have been planned ₹5.03 lakh crore in line with the full year budget estimates. Against the backdrop of comfortable cash position, the Central Government has not planned additional market borrowing for making payment to the state governments for GST compensation. States raised gross market borrowings of ₹3.09 lakh crore during H1:2021-22, 83.4 per cent of the indicative calendar.

The ways and means advances (WMA) limit for the Central Government for H1:2021-22 was scaled back to ₹1.2 lakh crore from ₹2 lakh crore in H1:2020-21; for H2:2021-22, it has been fixed at ₹0.5 lakh core as compared with ₹1.25 lakh core a year ago. For states/union territories, the Reserve Bank decided to continue with the enhanced interim WMA limit of ₹51,560 crore during the first half of 2021-22 to help them in tiding over the short-term mismatches and difficulties faced due to the pandemic.

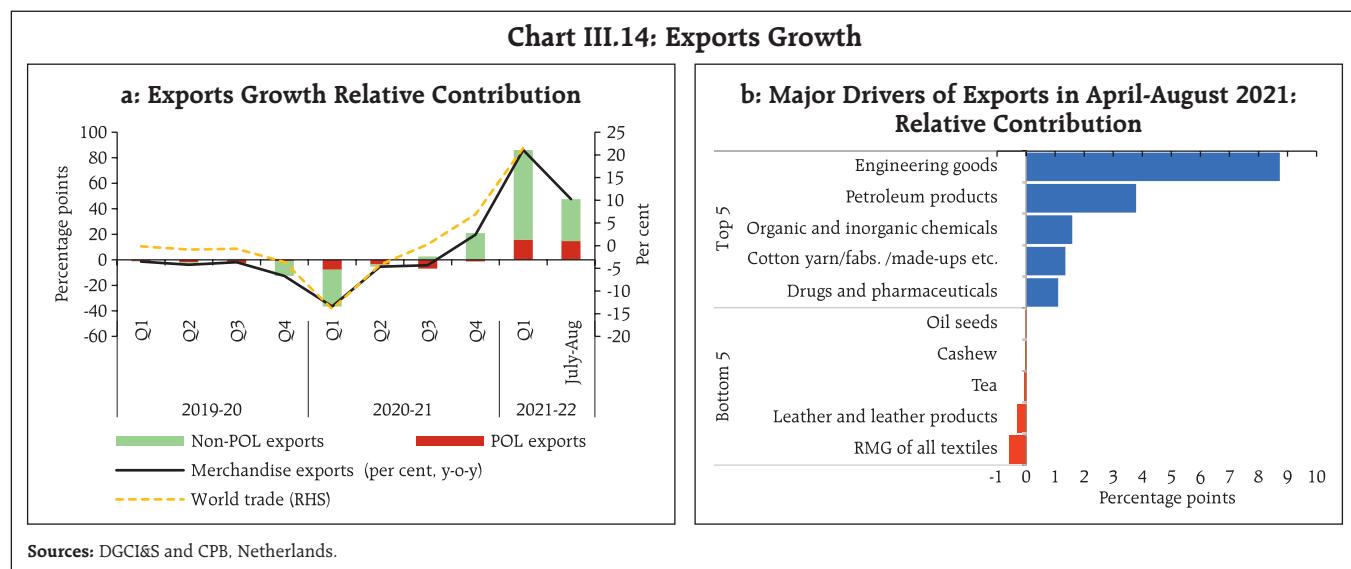
### III.1.4 External Demand

Buoyed by strong external demand and base effects, exports registered a sharp expansion in Q1:2021-22 and the buoyancy continued to Q2 (Chart III.13). Merchandise imports also rebounded strongly on the back of the recovery in domestic demand, higher crude oil prices and base effects. With the growth of imports outpacing that of exports, net exports contributed negatively to aggregate demand in Q1:2021-22 [(-)1.9 per cent in Q1 as compared with 1.3 per cent a year ago and (-) 4.8 per cent two years ago (pre-COVID)].

The surge in merchandise exports was powered by engineering goods, petroleum products, organic and inorganic chemicals, cotton textiles and drugs

**Chart III.13: Merchandise Trade**

Source: DGCIS.



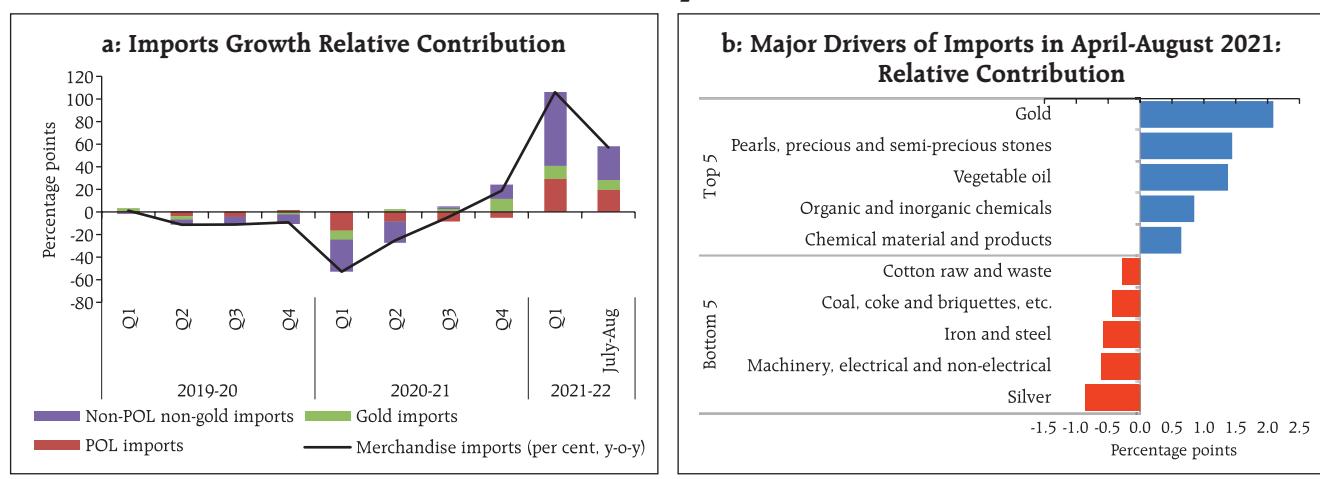
and pharmaceuticals. Labour-intensive sectors like apparels, leather products and tea continue to lag, mainly due to their greater sensitivity to mobility restrictions (Chart III.14). Going forward, the schemes such as District as Export Hub (DEH) covering One District One Product (ODOP), PLI scheme for sunrise sectors and *Ubharte-Sitaare* scheme for MSMEs should improve export competitiveness and help to achieve the target of US\$ 400 billion set for 2021-22. The persistent upsurge in global container freight prices and the growing shortage of semi-conductors, however, pose downside risks to a durable merchandise trade recovery (see Chapter V).

The impact of the second wave on import demand remained limited as compared to the first wave, reflecting calibrated and localised restrictions and businesses adapting to COVID-appropriate working environment. In Q2, with the gradual unwinding of restrictions, merchandise imports spurted and exceeded pre-COVID levels. Non-oil non-gold imports were led by higher shipments of pearls and precious stones, vegetable oils, chemicals and chemical products. Gold imports, after dropping sharply in May and June on the back of subdued demand due to the second wave, revived in Q2

with the relaxations of the restrictions (Chart III.15). The trade deficit widened to US\$ 55.5 billion in April-August 2021 from US\$ 23.4 billion a year ago, but it remained below its pre-COVID level (US\$ 77.2 billion).

Services exports growth in Q1: 2021-22 was the highest in 13 quarters and surpassed pre-pandemic levels (Chart III.16). This strong growth in the overall services exports was driven by software, business, and transportation services. Major information technology (IT) companies continued to benefit from pandemic-induced demand from international customers and adoption of new models. They recorded solid revenue growth in Q1:2021-22, driven by banking, financial services including insurance, communications, healthcare and technology services. As a result, resilient services surplus had a favourable impact on the current account balance in Q1:2021-22. During Q2 (July-August 2021), double-digit growth in services exports was driven by software, business and transport services.

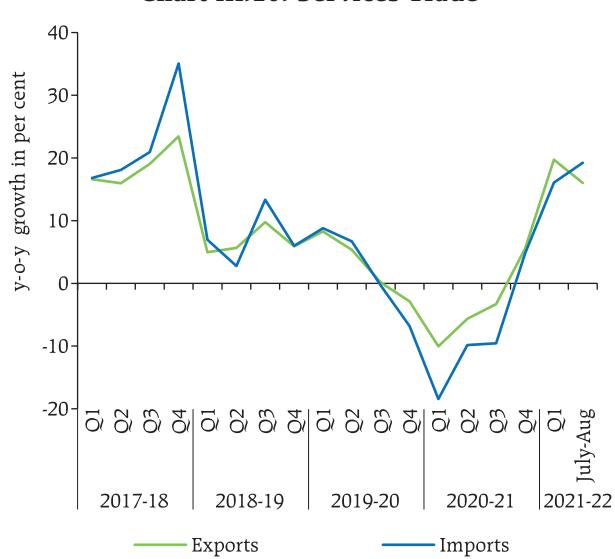
Turning to the financial account, capital flows remained healthy during Q1:2021-22, primarily due to foreign direct investment (FDI), which was driven

**Chart III.15: Imports Growth**

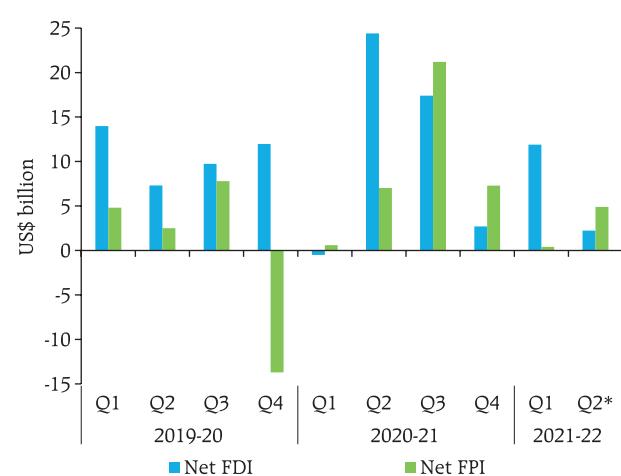
Source: DGCI&amp;S.

by a few big deals in the manufacturing and digital sectors (Chart III.17). Net FDI at US\$ 14.1 billion in April-July 2021 was higher than a year ago. While foreign portfolio investors (FPIs) adopted a cautious stance during the second wave of COVID-19, they turned net buyers from August 2021 amidst robust Q1 corporate earnings and better domestic

macroeconomic indicators. Accretions to non-resident deposits moderated during April-July 2021 as compared with a year ago. As on October 1, 2021, India's foreign exchange reserves stood at US\$ 637.5 billion, equivalent to 14 months of imports projected for 2021-22 and 111.6 per cent of outstanding external debt at end-June 2021.

**Chart III.16: Services Trade**

Source: RBI.

**Chart III.17: Net Foreign Direct and Portfolio Investment**

Notes: \*: Net FDI data pertains to July 2021.

Sources: National Securities Depository Limited (NSDL) and RBI.

**Table III.5: Sector-wise Growth in GVA**

(y-o-y growth)

Sector	2019-20 (FRE)	2020-21 (PE)	Weighted contribution		2019-20				2020-21				2021-22
			2019-20	2020-21	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
<b>Agriculture, forestry and fishing</b>	<b>4.3</b>	<b>3.6</b>	<b>0.6</b>	<b>0.5</b>	<b>3.3</b>	<b>3.5</b>	<b>3.4</b>	<b>6.8</b>	<b>3.5</b>	<b>3.0</b>	<b>4.5</b>	<b>3.1</b>	<b>4.5 (8.2)</b>
<b>Industry</b>	<b>-2.0</b>	<b>-6.4</b>	<b>-0.5</b>	<b>-1.4</b>	<b>1.0</b>	<b>-2.7</b>	<b>-3.0</b>	<b>-3.2</b>	<b>-31.0</b>	<b>-1.6</b>	<b>1.6</b>	<b>5.5</b>	<b>40.4 (-3.1)</b>
Mining and quarrying	-2.5	-8.5	-0.1	-0.2	-1.3	-5.2	-3.5	-0.9	-17.2	-6.5	-4.4	-5.7	18.6 (-1.8)
Manufacturing	-2.4	-7.2	-0.4	-1.2	0.6	-3.0	-2.9	-4.2	-36.0	-1.5	1.7	6.9	49.6 (-4.2)
Electricity, gas, water supply and other utilities	2.1	1.9	0.0	0.0	6.9	1.7	-3.1	2.6	-9.9	2.3	7.3	9.1	14.3 (3.0)
<b>Services</b>	<b>6.4</b>	<b>-8.4</b>	<b>4.0</b>	<b>-5.3</b>	<b>6.8</b>	<b>7.3</b>	<b>5.8</b>	<b>5.6</b>	<b>-24.9</b>	<b>-11.0</b>	<b>-0.2</b>	<b>3.2</b>	<b>16.1 (-12.8)</b>
Construction	1.0	-8.6	0.1	-0.7	3.7	1.0	-1.3	0.7	-49.5	-7.2	6.5	14.5	68.3 (-14.9)
Trade, hotels, transport, communication	6.4	-18.2	1.3	-3.7	6.2	6.8	7.0	5.7	-48.1	-16.1	-7.9	-2.3	34.3 (-30.2)
Financial, real estate and professional services	7.3	-1.5	1.6	-0.3	8.8	8.9	5.5	4.9	-5.0	-9.1	6.7	5.4	3.7 (-1.5)
Public administration, defence and other services	8.3	-4.6	1.1	-0.6	5.6	8.8	8.9	9.6	-10.2	-9.2	-2.2	2.3	5.8 (-5.0)
<b>GVA at basic prices</b>	<b>4.1</b>	<b>-6.2</b>	<b>4.1</b>	<b>-6.2</b>	<b>5.0</b>	<b>4.6</b>	<b>3.4</b>	<b>3.7</b>	<b>-22.4</b>	<b>-7.3</b>	<b>1.0</b>	<b>3.7</b>	<b>18.8 (-7.8)</b>

**Note:** FRE: First revised estimates; PE: Provisional estimates.

Figures in parenthesis are growth rates over Q1:2019-20.

**Source:** NSO.

### III.2 Aggregate Supply

Real gross value added (GVA) at basic prices rose by 18.8 per cent y-o-y during Q1:2021-22 as against a contraction of 22.4 per cent in Q1:2020-21 (Table III.5). The resilience of agriculture and the recovery in manufacturing and non-contact intensive services supported the expansion in GVA, while contact-intensive services lagged due to logistic and operational constraints. Real GVA was, however, 7.8 per cent below its pre-pandemic (Q1:2019-20) level.

#### III.2.1 Agriculture

Agriculture and allied activities registered robust growth in Q1:2021-22 on the back of record rabi and horticulture production and resilience in allied activities. Foodgrains production rose by 3.7 per cent in 2020-21, led by rice and wheat (Table III.6). The production of nine major oilseeds increased by 8.7 per cent, supported by the implementation of area expansion policies under the National Food Security Mission for edible oils. Horticulture production rose by 2.9 per cent during 2020-21, led by an increase of 2.8 per cent in the area under cultivation.

In 2021, the south-west monsoon rainfall encountered two slowdown phases (from the third

week of June to mid-July and almost the whole of August), after a normal start. With the strong revival of rains in September, the cumulative seasonal

**Table III.6: Agriculture Production**

Item	Lakh tonnes		Growth (%)
	2019-20	2020-21	
<b>I. Total foodgrains</b>	<b>2,975.0</b>	<b>3,086.5</b>	<b>3.7</b>
Rice	1,188.7	1,222.7	2.9
Wheat	1,078.6	1,095.2	1.5
Coarse cereals	477.5	511.5	7.1
Pulses	230.3	257.2	11.7
<b>II. Commercial crops</b>			
Sugarcane	3,705.0	3,992.5	7.8
Cotton	360.7	353.8	-1.9
Oilseeds	332.2	361.0	8.7
<b>III. Total horticulture crops</b>	<b>3,204.7</b>	<b>3,298.6</b>	<b>2.9</b>
<b>III.1 Total fruits</b>	<b>1,020.8</b>	<b>1,027.6</b>	<b>0.7</b>
Banana	326.0	338.3	3.8
Citrus	145.7	140.7	-3.4
Mango	203.2	208.9	2.8
<b>III.2 Total vegetables</b>	<b>1,882.8</b>	<b>1,962.7</b>	<b>4.2</b>
Onion	260.9	269.2	3.2
Potato	485.6	536.9	10.6
Tomato	205.5	210.0	2.2
<b>III.3 Plantation crops</b>	<b>161.2</b>	<b>166.0</b>	<b>3.0</b>
<b>III.4 Total spices</b>	<b>101.4</b>	<b>105.4</b>	<b>3.9</b>
<b>III.5 Flowers and aromatics</b>	<b>37.3</b>	<b>35.7</b>	<b>-4.3</b>

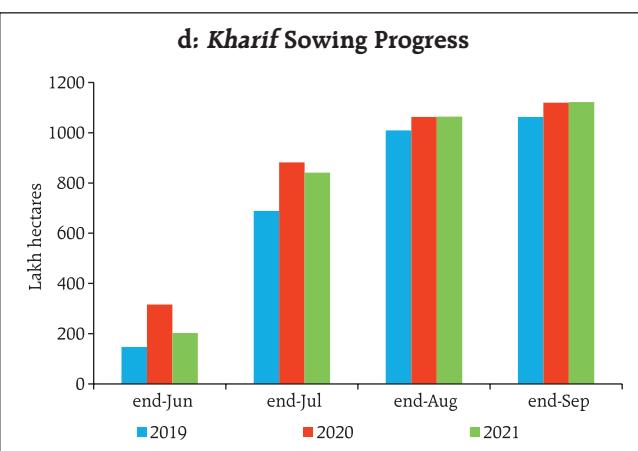
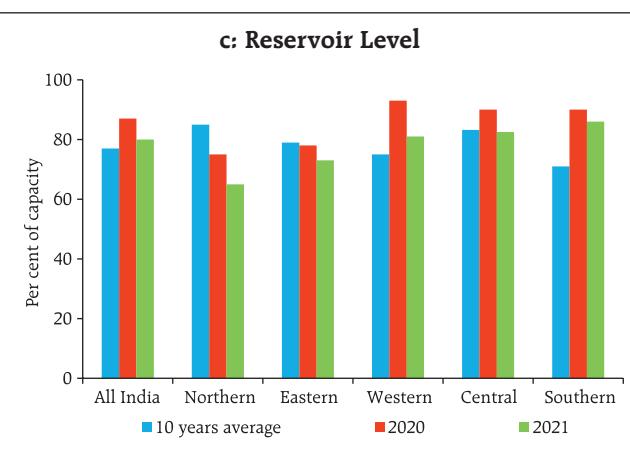
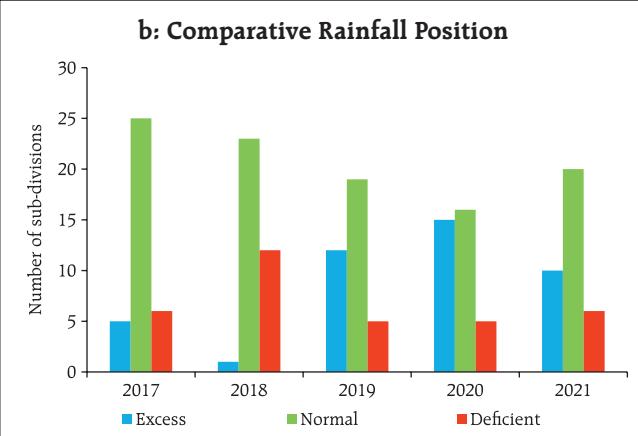
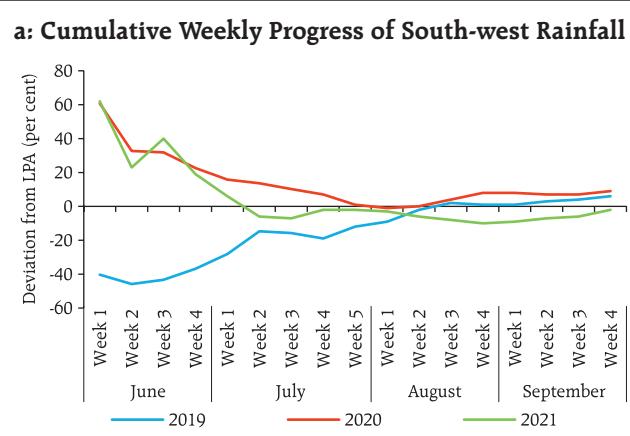
**Source:** Ministry of Agriculture and Farmers' Welfare (MOAFW).

rainfall was 0.7 per cent below the long period average (LPA), with 83 per cent of the sub-divisions receiving normal or above normal rainfall (Charts III.18a and b). The production weighted rainfall (PRN) index at 102 per cent (as on September 30) was below last year's position (105 per cent) and the PRN for rice, coarse cereals and sugarcane exceeded the 5-year average. As on September 30, 2021, reservoir levels stood at 80 per cent of the full reservoir level (FRL), higher than the decadal average of 77 per cent – brightening the prospects for the ensuing *rabi* season (Chart III.18 c).

Despite the breaks in the monsoon's progress, *kharif* sowing progressed well. As on September 30, 2021 it was 0.2 per cent above the record sowing acreage

a year ago, and 4.1 per cent higher than the normal sown area (5-year average) (Chart III.18d). Higher minimum support prices (MSPs) – with increases of 1.1 per cent to 6.6 per cent over the previous year for *kharif* 2021-22 with assured return of at least 50 per cent over the cost of production (as measured by A2 plus FL) – supported sowing activity. According to the first advance estimates for 2021-22, the production of *kharif* foodgrains rose by 0.6 per cent over last year (Table III.7). The Government of India had set the target for foodgrains production for the year at 3,070 lakh tonnes in the National *Kharif* Strategy for 2021-22 which, *inter alia*, aims to attain self-sufficiency in the production of pulses and oilseeds.

**Chart III.18: Progress of Rainfall and *Kharif* Sowing**



**Sources:** India Meteorological Department (IMD), Central Water Commission, and Ministry of Agriculture and Farmers' Welfare, Government of India.

**Table III.7: Kharif Crops Production 2021-22**  
(Lakh tonnes)

Item	2020-21		First AE	2021-22	
	First AE	Fourth AE		Over 1 <sup>st</sup> AE 2020-21	Over 4 <sup>th</sup> AE 2020-21
1. Foodgrains	1,445.2	1,495.6	1,505.0	4.1	0.6
Rice	1,023.6	1,044.1	1,070.4	4.6	2.5
Coarse Cereals	328.4	364.6	340.0	3.5	-6.7
Pulses	93.1	86.9	94.5	1.5	8.7
Tur	40.4	42.8	44.3	9.7	3.5
Urad	21.5	16.0	20.5	-4.7	28.1
Moong	20.9	20.1	20.5	-1.9	2.0
2. Oilseeds (total)	257.3	240.3	233.9	-9.1	-2.7
Groundnut	95.4	85.6	82.5	-13.4	-3.5
Soyabean	135.8	129.0	127.2	-6.4	-1.4
3. Cotton #	371.2	353.8	362.2	-2.4	2.4
4. Jute & Mesta ##	96.6	95.6	96.1	-0.5	0.5
5. Sugarcane	3998.3	3992.5	4192.5	4.9	5.0

#: Lakh bales of 170 kgs each.

# #: Lakh bales of 180 kgs each.

Source: MOAFW.

Improved rural prospects from *kharif* sowing are mirrored in high frequency indicators, *viz.*, sales of tractors and two-wheelers (Table III.8). Exports of agriculture and allied products also expanded.

**Table III.8: Rural Economy - High Frequency Indicators**

Items	Unit	April-Aug 2019	April-Aug 2020	April-Aug 2021
Tractor sales	Number (in lakh)	2.7	2.9	3.5
Two-wheeler sales	Number (in lakh)	80.4	41.3	49.9
Fertiliser sales	Lakh tonnes	212.2	253.6	221.7
Demand for employment (MGNREGA)	Crore households	10.4	15.2	14.7
Agriculture and allied sector exports*	USD billion	11.8	11.3	15.4
Agriculture credit growth*	y-o-y	7.3	4.8	11.3
Rice stock to buffer norm*	Ratio	2.2	2.6	2.9
Wheat stock to buffer norm*	Ratio	1.5	1.9	1.9

Sources: Tractor Manufacturers Association; SIAM; Ministry of Chemicals and Fertilisers; Ministry of Rural Development; CMIE; RBI; and Food Corporation of India.

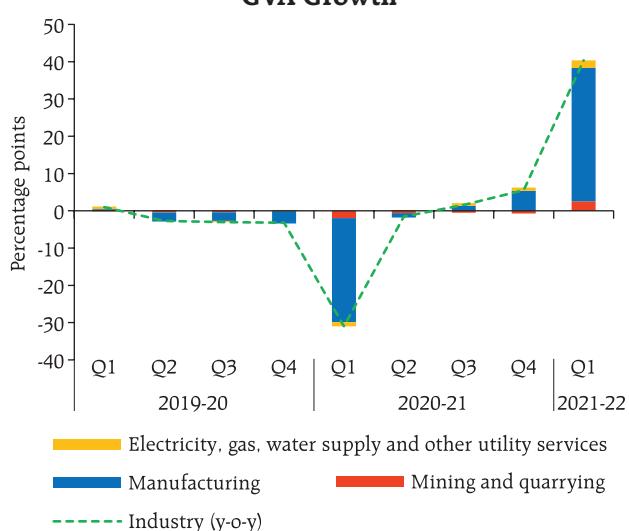
\*: As at end-August.

### III.2.2 Industry

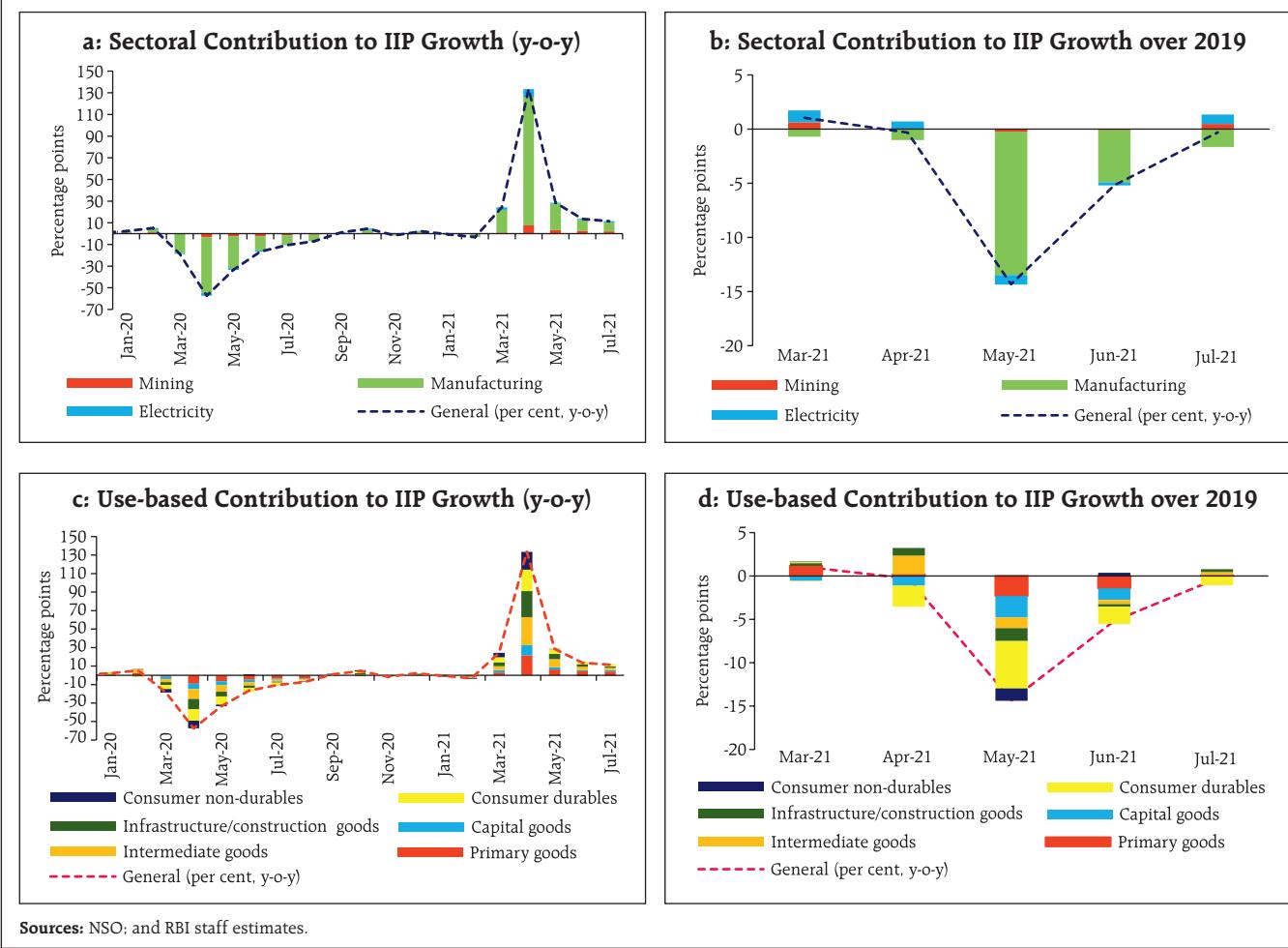
Industrial GVA posted y-o-y growth of 40.4 per cent in Q1:2021-22, aided by a favourable base effect (31.0 per cent contraction last year). On a sequential basis, industrial output contracted by 11.8 per cent in Q1, reflecting the loss of momentum in the face of the second wave. Industrial GVA trailed 3.1 per cent below its pre-pandemic level (Q1:2019-20); while mining and manufacturing remained below Q1:2019-20 levels, electricity, gas, water supply and other services exceeded Q1:2019-20 levels by 3.0 per cent (Chart III.19).

The index of industrial production (IIP) rose by 44.7 per cent y-o-y during Q1:2021-22 on a negative base but remained 6.7 per cent below its level two years back. In Q2, the IIP expanded by 11.5 per cent y-o-y in July 2021, although it trailed marginally the pre-pandemic levels (July 2019). Sequentially, the IIP expanded in June-July after moderating in April and May. In terms of the use-based classification, all sectors except for consumer durables exceeded 2019-20 levels by July (Chart III.20). Manufacturing activity dipped in May but gained momentum in

**Chart III.19: Weighted Contribution to Industrial GVA Growth**

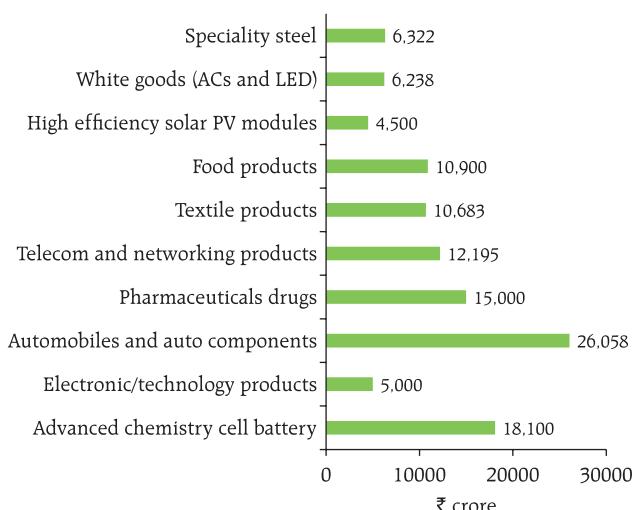


Sources: NSO and RBI staff estimates.

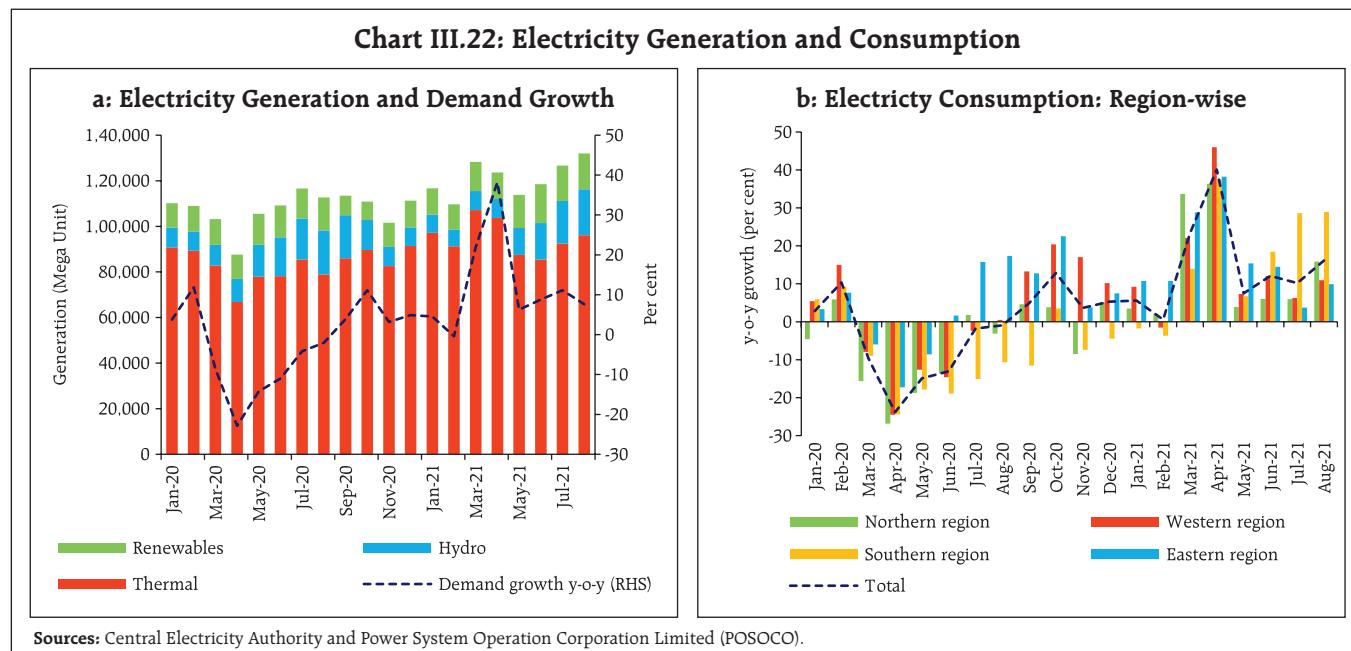
**Chart III.20: Index of Industrial Production (IIP)**

June-July. The production of motor vehicles, trailers, machinery equipment, electrical equipment, textiles and beverages supported IIP growth in July.

Manufacturing activity is expected to be boosted by the PLI scheme for 13 sectors, aimed at creating global manufacturing champions for an *AtmaNirbhar Bharat*, with an outlay of about Rs. 1.97 lakh crore over 5 years. The PLI scheme, implemented across ten sectors so far (Chart III.21), can improve the manufacturing sector's global competitiveness and participation in the global supply chain, giving impetus to domestic production, exports, investment in cutting edge technology, innovations and employment opportunities by establishing linkages with the MSME sector.

**Chart III.21: PLI Scheme: Sectoral Financial Outlays**

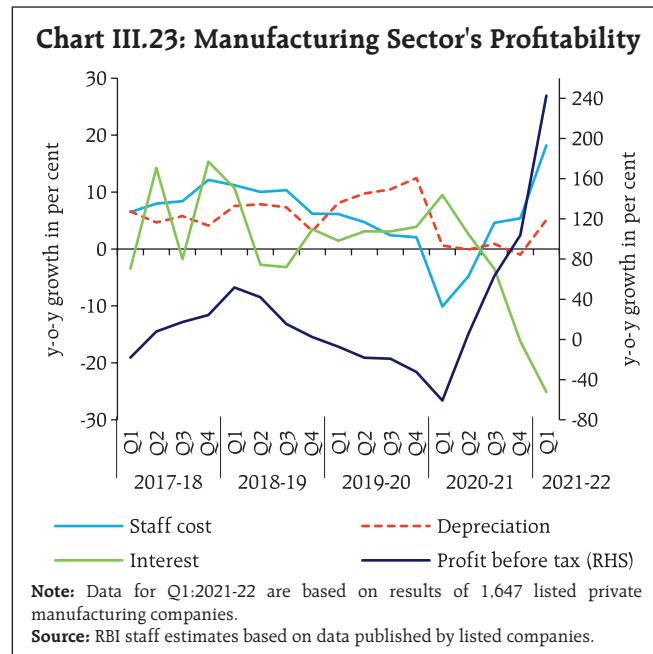
Source: PIB.

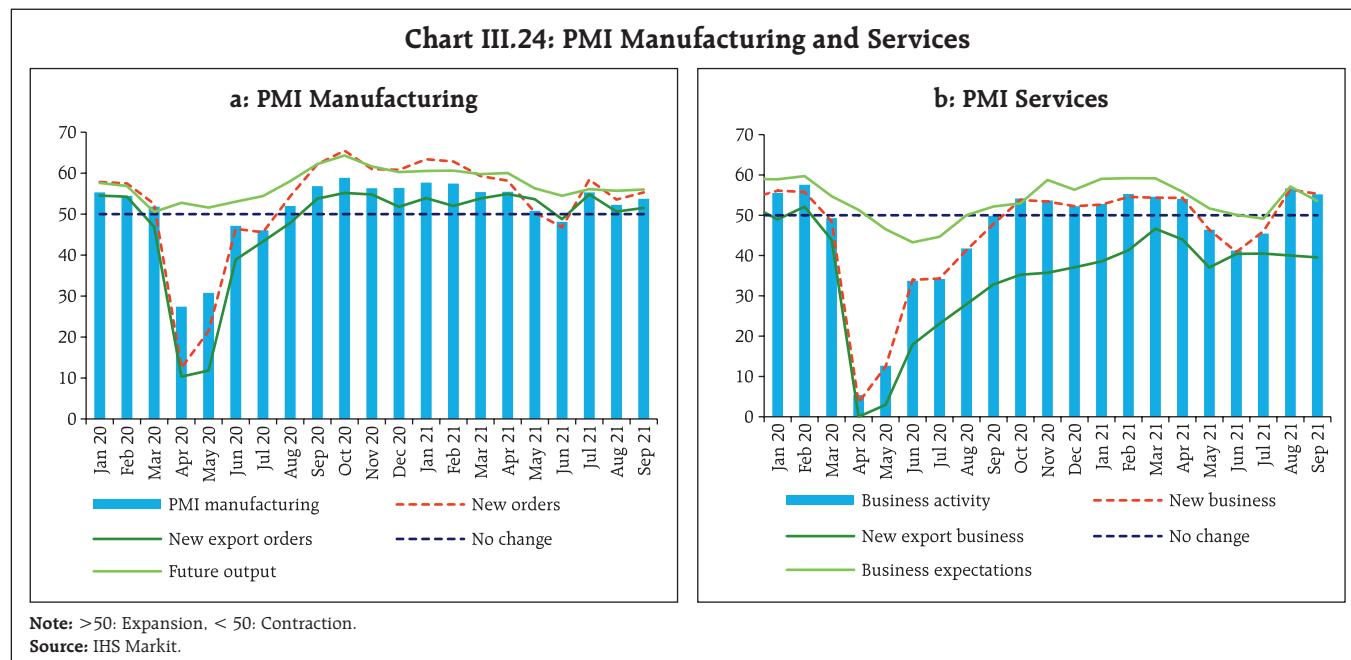


Electricity generation improved substantially in Q1:2021-22 on a y-o-y basis but remained below 2019-20 levels. Thermal and renewable sources expanded y-o-y by 24.1 per cent and 12.9 per cent, respectively, with the latter surpassing 2019-20 levels. In Q2, the electricity generation expanded by 1.6 per cent and 15.8 per cent, respectively, in July and August, with hydro and thermal power generation also exceeding pre-pandemic levels (Chart III.22a). Electricity consumption rose across the country in July and August, with base effects leading to faster growth in some regions (Chart III.22b). Competition and efficiency in electricity distribution should accrue from the Electricity Amendment Bill 2021 which aims to delicense electricity distribution and allow entry of private players.

The buoyant y-o-y expansion in nominal GVA of manufacturing in Q1 was supported by strong corporate profitability (Chart III.23). Apart from the base effect, the substantial contraction in interest expenses on the back of easy financial conditions contributed to the surge in profitability, even as employee costs and operating expenses posted an uptick.

According to the Reserve Bank's industrial outlook survey, the manufacturing sector's sentiments rebounded in Q2:2020-21, with the business assessment index improving to 116.7 in Q2:2021-22 from 89.7 in Q1:2021-22. For Q3:2021-22, respondents expect further improvement in production volumes, new orders and job landscape. The manufacturing





purchasing managers' index (PMI) remained in expansion zone at 53.7 in September, driven by strengthening demand conditions (Chart III.24a).

Overall, the manufacturing activity is gradually normalising with the waning of the second wave (Table III.9). Consumer non-durables, surpassed the

**Table III.9: Industrial Sector: Progress towards Normalisation**  
(Ratio to the respective month/quarter of 2019-2020)

Indicators	2020-21				2021-22						
	Q1	Q2	Q3	Q4	Q1	Apr	May	Jun	Jul	Aug	Sep
I Industrial Production											
PMI: Manufacturing (>50 indicates growth over previous month)	35.1	51.6	57.2	56.9	51.5	55.5	50.8	48.1	55.3	52.3	53.7
II Index of Industrial Production											
Manufacturing	64	94	102	106	93	100	86	95	100		
Capital goods	60	94	102	107	92	99	83	94	98		
Infrastructure & construction goods	35	87	99	109	74	82	61	79	100		
Consumer durables goods	53	98	105	110	98	107	89	98	102		
Consumer non-durables goods	32	90	107	118	73	81	57	83	92		
III Eight Core Industries Index											
Steel	83	100	103	105	98	100	92	102	100		
Cement	76	95	100	104	96	101	92	96	102	104	
Electricity demand	51	100	103	113	97	102	92	96	102	106	
III Production of Automobiles											
Passenger vehicles	62	89	96	110	97	104	88	100	105	117	
Two wheelers	84	99	106	108	98	107	91	97	106	115	105
Three wheelers	16	93	116	117	83	96	43	116	112	99	
Production of tractors	21	95	118	129	60	81	31	70	84	89	
	23	45	66	84	61	69	51	62	66	57	
	60	123	162	167	133	128	105	171	149	151	

**Sources:** CMIE; CEIC; NSO; SIAM; and RBI staff estimates.

← Below pre-Covid level

Normalisation / recovery of activity →

pre-COVID levels during June and remained strong in Q2, while infrastructure and primary goods, steel, and cement made progress towards normalisation in June and surpassed pre-pandemic level in Q2.

### III.2.3 Services

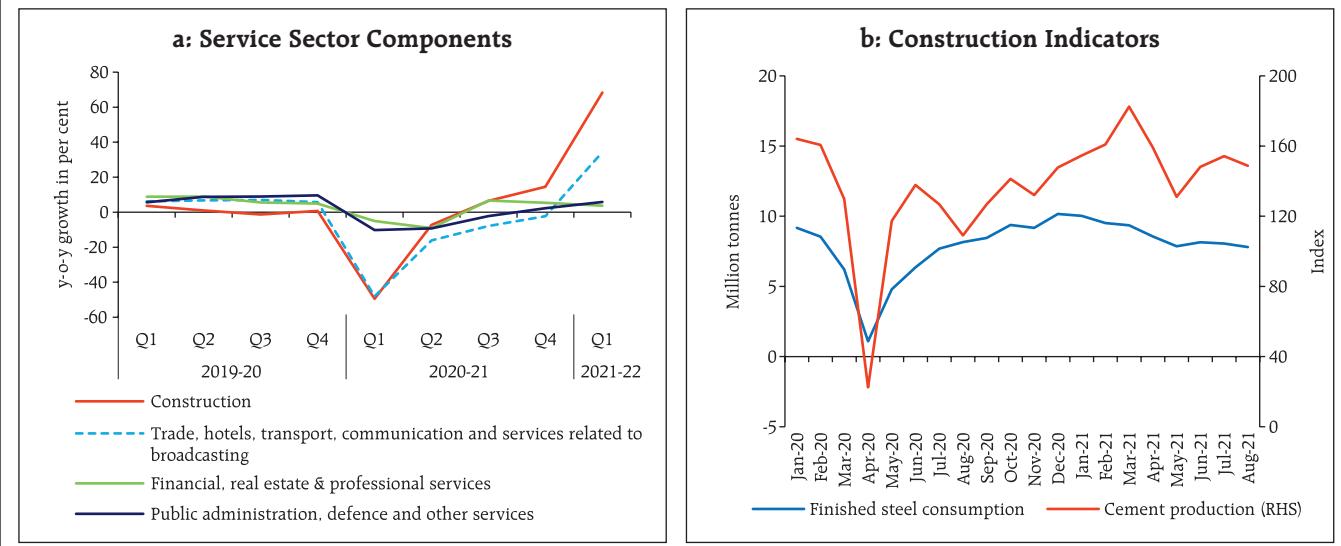
The second wave impacted the services sector in a disproportionately high manner in view of the blow to contact-intensive services. Services contracted by double digits sequentially in Q1:2021-22, interrupting the recovery from the first wave. On a y-o-y basis, however, the services sector expanded by 16.1 per cent in Q1:2021-22 driven by a favourable base effect. With the retreating of the second wave, services regained momentum in Q2 as shown by high frequency indicators, and contact-intensive services began mending with the gradual easing of restrictions and the accelerated pace of vaccination (Table III.9). GST collections and issuances of e-way bills – indicators of wholesale and retail trade – revived to pre-pandemic levels from June/July onwards, suggesting strengthening domestic trading activity. Some revival in discretionary spending and pent-up demand are also boosting trading activity and e-commerce. In the construction sector, cement production rose further

while finished steel consumption moderated in August (Chart III.25).

Transportation services remained relatively upbeat during Q1 and gained further in Q2 with the gradual unwinding of the regional lockdowns. Railway freight traffic remains above pre-COVID levels and posted a robust growth of 16.9 per cent in August, while port cargo traffic reached its pre-pandemic level in August. Toll collections in Q1 and Q2 have stayed above the pre-pandemic levels due to a greater use of FASTag (Table III.9). Commercial vehicle sales – an indicator of transportation services – almost halved sequentially in Q1, but there are reports of an uptick in sales in Q2. The aviation sector displayed segmentation, with passenger traffic lagging cargo traffic considerably. Domestic air passenger traffic is, however, gaining traction with the lifting of the restrictions and increasing confidence. The communication services performed well in Q1 and Q2, driven by pandemic-induced digitisation of the economy.

Despite the strong performance of information technology and financial companies, GVA in financial, real estate and professional services posted a subdued growth of 3.7 per cent in Q1 and moderated

**Chart III.25: Services Sector**



**Sources:** Office of Economic Adviser, Joint Plant Committee, Department of Industrial Policy & Promotion, Ministry of Commerce & Industry.

**Table III.10: Services Sector: Progress towards Normalisation**  
(Ratio to the respective month/quarter of 2019-2020)

Indicators	2020-21				2021-22					
	Q1	Q2	Q3	Q4	Q1	Apr	May	Jun	Jul	Sep
PMI: Services (>50 indicates growth over previous month)	17.2	41.9	53.4	54.2	47.2	54	46.4	41.2	45.4	56.7
<b>I Construction</b>										
Steel consumption	49	93	114	121	98	111	89	95	94	85
Cement production	62	89	96	110	97	104	88	100	105	117
<b>II Trade, hotels, transport, communication and services related to broadcasting</b>										
Commercial vehicle sales (Quarterly average)	15	80	99	143	51					
Domestic air passenger traffic	7	25	50	72	31	52	17	26	42	56
Domestic air cargo	26	68	90	105	78	95	66	74	83	87
International air cargo	43	77	87	101	94	96	91	95	92	94
Freight traffic	79	105	111	113	110	110	109	111	113	122
Port cargo	80	91	102	108	102	102	102	102	93	100
Toll collection: volume	184	349	295	174	548	633	423	593	704	719
Petroleum consumption	74	89	99	102	88	93	79	92	95	93
GST E-way bill	50	100	115	128	97	112	74	106	118	120
GST revenue	59	92	108	114	107	124	102	93	114	114
<b>III Financial, real estate and professional services</b>										
Credit outstanding y-o-y growth (per cent)	5.6	5.1	6.2	5.6	5.9	6.2	5.9	6.1	6.1	6.7
Bank deposits y-o-y growth (per cent)	9.6	10.5	10.8	11.4	9.9	11.2	9.5	9.8	9.8	9.5
Life insurance: first year premium	81	116	97	135	87	98	70	93	95	118
Non-life insurance premium	95	106	105	114	108	109	101	114	140	137

**Sources:** CMIE; CEIC; NSO; MOSPI; IRDAI; RBI staff estimates.

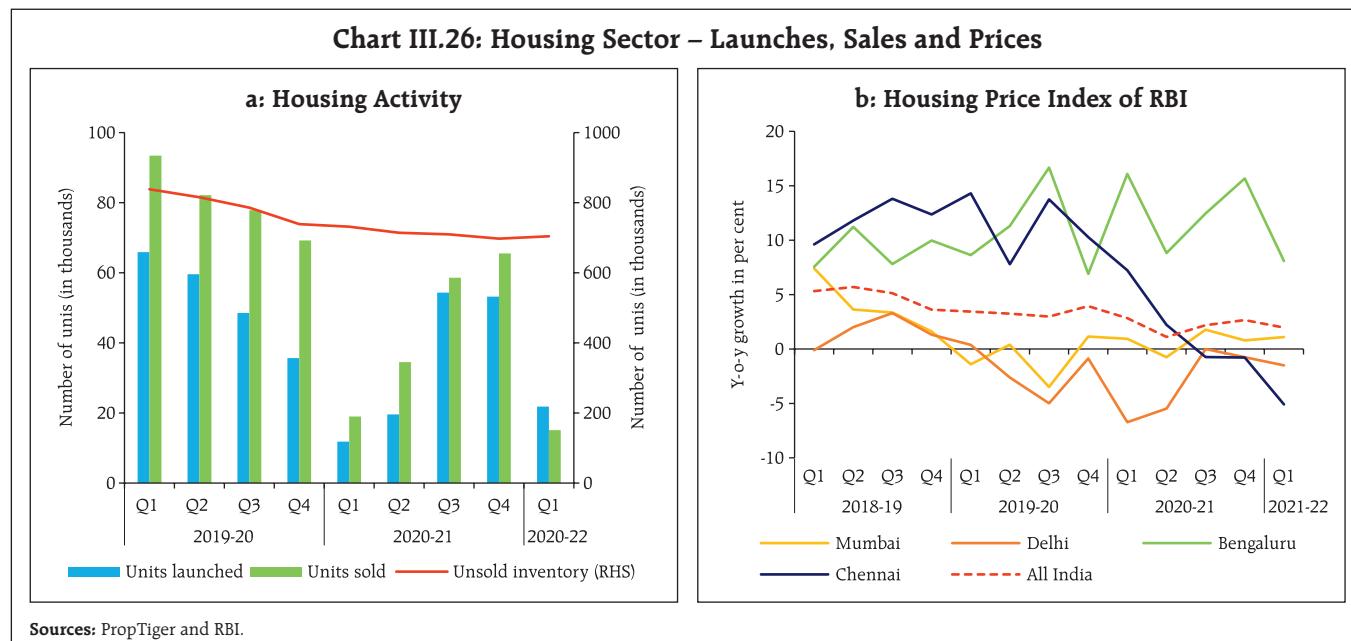
← Below pre-Covid level

Normalisation / recovery of activity →

substantially over the preceding quarter as businesses in other segments faltered due to mobility related restrictions. Some recovery, however, was seen in the travel and hospitality industries, real estate and other contact-intensive professional services in Q2. Growth in aggregate deposits remained buoyant and bank credit recorded some improvement, extending support to financial services during Q2. Real estate activity dampened in Q1 as new launches and sales were hampered by the lockdowns. The inventory overhang stagnated at an average of 58 months in Q1 (Chart III.26a). All-India housing prices, according to the RBI's index, showed a deceleration in Q1:2021-22, dragged down by Bengaluru, Chennai and Delhi (Chart III.26b).

Public administration, defence and other services (PADO) expanded moderately in Q1:2021-22 on a y-o-y basis. The central government's revenue expenditure, excluding interest payments and subsidies, contracted in Q1 on an unfavourable base while that of state governments posted a double-digit growth. Other services in PADO – private education; health; personal services; and cultural and recreational activities – remained tepid.

In August and September, the PMI services re-entered the expansion zone reversing the second wave induced contraction of May-July (Chart III.24b). The PMI composite output index rose to 55.3 in September from 49.2 in July.



### III. Conclusion

The momentum of economic activity was interrupted during Q1:2021-22 by the second wave. Aggregate demand began reviving in June and gained momentum in Q2. It is expected to strengthen further in H2 with the recovery in both urban and rural consumption. On the supply side, agriculture and allied activities should benefit from the good *kharif* sowing and harvest. *Rabi* sowing and total crops production are expected to be well-supported by improving water storage in reservoirs and the early

announcement of minimum support prices for the ensuing *rabi* season. The recovery in manufacturing and services activities, including contact-intensive services, in H2 should get a fillip from the growing proportion of the inoculated population, further normalisation of supply chains, congenial financing conditions and the government's infrastructure and asset monetisation push. The outlook, however, remains critically dependent upon the evolution of COVID-19's trajectory and the progress of vaccination to cover the rest of the population.

## IV. Financial Markets and Liquidity Conditions

*During H1:2021-22, domestic financial markets remained vibrant amidst easy liquidity conditions, notwithstanding the ravages unleashed by the virulent second wave of the pandemic in April-May 2021. Monetary transmission improved further, due to abundant liquidity and forward guidance by the MPC of continuing with the accommodative stance. Going forward, liquidity conditions would continue to be accommodative in consonance with the monetary policy stance through calibrated liquidity management operations.*

Global financial markets remained exuberant through most of H1:2021-22, buoyed by a surfeit of liquidity, ultra-accommodative monetary policies in major advanced economies (AEs) and forward guidance promising continuation of these policies. Investor optimism has caused valuations across a range of assets to be elevated. Stock markets scaled peaks repeatedly in most AEs and select emerging market economies (EMEs), with intermittent bouts of corrections sparked by the rapid spread of the Delta variant of COVID-19. Bond yields softened in AEs as markets increasingly acquiesced with central banks that inflationary pressures are transient and would not trigger normalisation. In EMEs, bond yields experienced two-way movements, with phases of hardening in response to the uncertainty over the timing and pace of tapering of asset purchases by the US Federal Reserve. In currency markets, the US dollar strengthened from May 2021 on better economic prospects and consequently, some EME currencies depreciated while others faced appreciation pressures because of carry trade and search for returns.

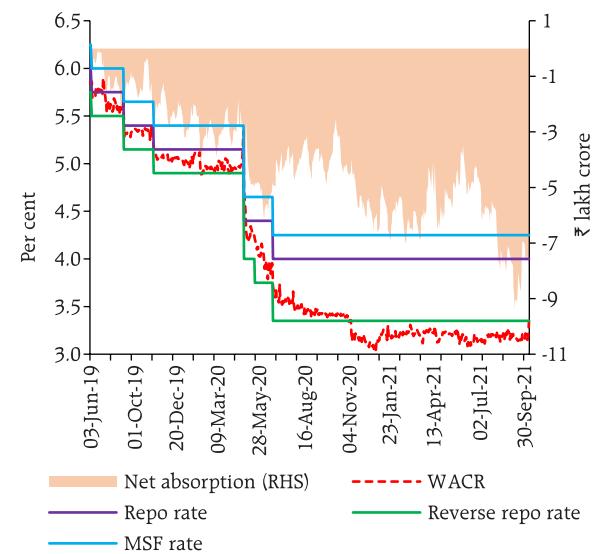
### IV.1 Domestic Financial Markets

During H1:2021-22, domestic financial markets remained vibrant amidst easy liquidity conditions, notwithstanding the ravages unleashed by the virulent second wave of the pandemic in April-May 2021. Large liquidity injections, including through the secondary market acquisition programme of government securities (G-SAP), ensured orderly conditions in financial markets. Concerns about a possible third wave, uncertainty over the path of the US Fed's tapering of asset purchases, elevated inflation, and the large government borrowing programme kept market sentiments edgy.

#### IV.1.1 Money Market

Money market rates consistently traded below the reverse repo rate – the lower bound of the liquidity adjustment facility (LAF) corridor – during H1:2021-22 (Chart IV.1). The weighted average call rate (WACR) – the operating target of monetary policy – traded 17 basis points (bps) below the floor of the corridor on an average during H1. With the Reserve Bank becoming the major counterparty for banks, there was

**Chart IV.1: Liquidity, Policy Corridor and WACR**



Source: Reserve Bank of India (RBI).

a shrinkage in inter-bank trading activity – average daily volume in the call money market declined to ₹7,381 crore in September 2021 from ₹10,126 crore in March 2021.

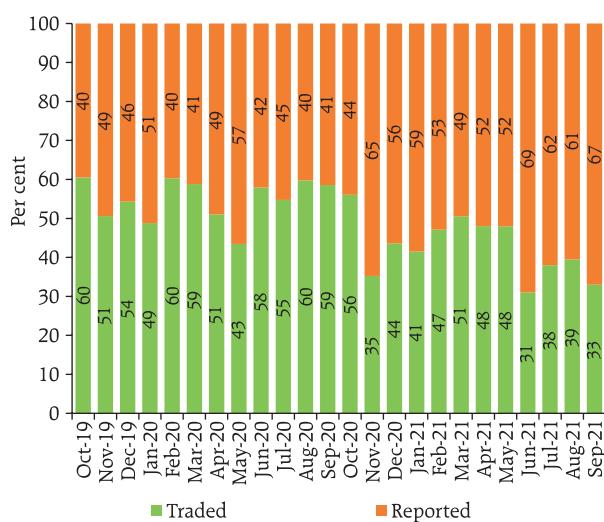
In the overnight call money segment, the weighted average rate (WAR) of traded deals generally remained above the reverse repo rate while that on reported deals<sup>1</sup> remained below the reverse repo rate, reflecting market segmentation as small co-operative banks – principal lenders in reported deals – do not have the requisite information technology (IT) infrastructure to access the Negotiated Dealing System - Call (NDS-Call) and usually lend bilaterally towards the close of market hours at lower rates. The share of the reported deals in total volumes in the call money segment increased to 60 per cent in H1:2021-22 from 54 per cent in H2:2020-21 (Chart IV.2), driven by a rise in lending by co-operative banks from 65 per cent of the total volume of the call money segment to 80 per cent over the same period.

The surplus liquidity conditions also led to a diminishing share of the uncollateralised segment in

total overnight money market volume – from 6.0 per cent in February 2020 (pre-pandemic) to 2.0 per cent in September 2021. In the collateralised segment, the share of triparty repo in total overnight money market volume increased to 74 per cent in September 2021 from 72 per cent in March 2021 while the share of market repo declined to 24 per cent from 26 per cent during the same period (Chart IV.3). Mutual funds, the major lenders in both the collateralised segments, increased their participation further in H1 from 68 per cent to 70 per cent in the triparty repo segment and from 61 per cent to 63 per cent in market repos. On the borrowing side, there was an increase in the share of private banks in both the secured segments – from 24 per cent in March 2021 to 25 per cent in September 2021 for triparty repo and from 13 per cent to 14 per cent for market repo.

The rates in the secured overnight segments remained consistently below the reverse repo rate during H1:2021-22 on surplus liquidity (Chart IV.4). Interest rates on longer-term money market instruments like 91-day Treasury Bills (T-bills) and 3-month certificates of deposit (CDs) traded marginally above the reverse repo rate, on average, by 1 bp and 8

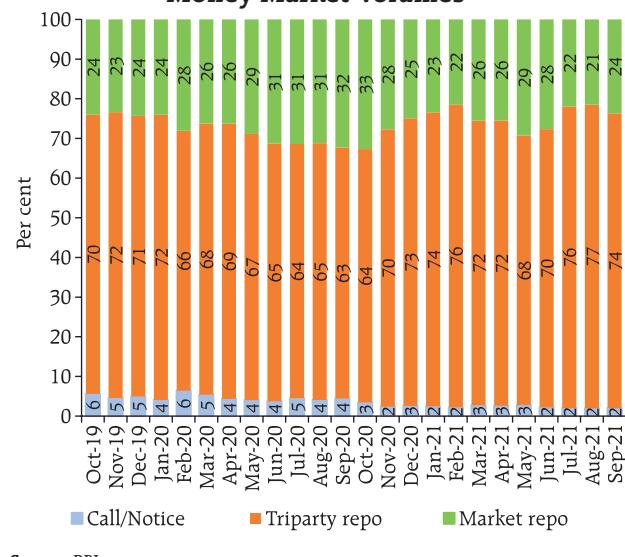
**Chart IV.2: Share of Traded/Reported Deals in Call Money Market**



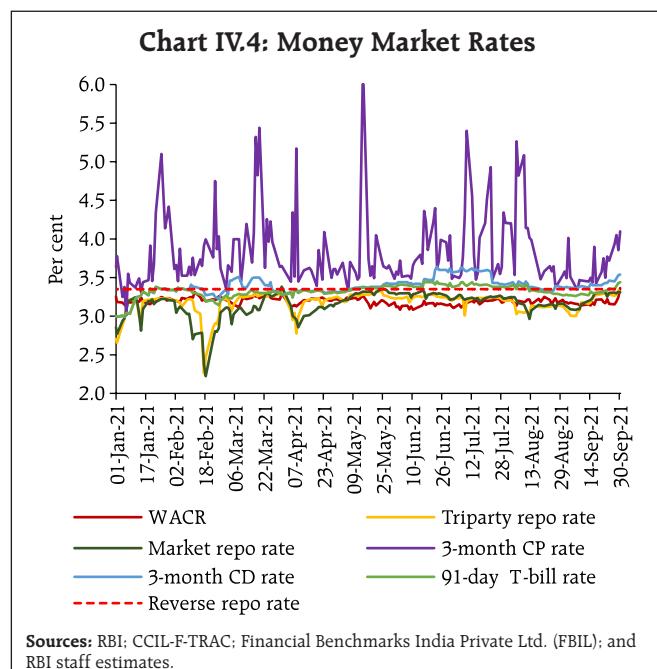
Sources: Clearing Corporation of India Ltd. (CCIL); and RBI.

<sup>1</sup> 'Traded deals' are negotiated directly on the NDS-Call platform whereas 'reported deals' are over-the-counter (OTC) deals which are reported on the NDS-Call platform after the completion of negotiation of deals.

**Chart IV.3: Share in Overnight Money Market Volumes**



Source: RBI.



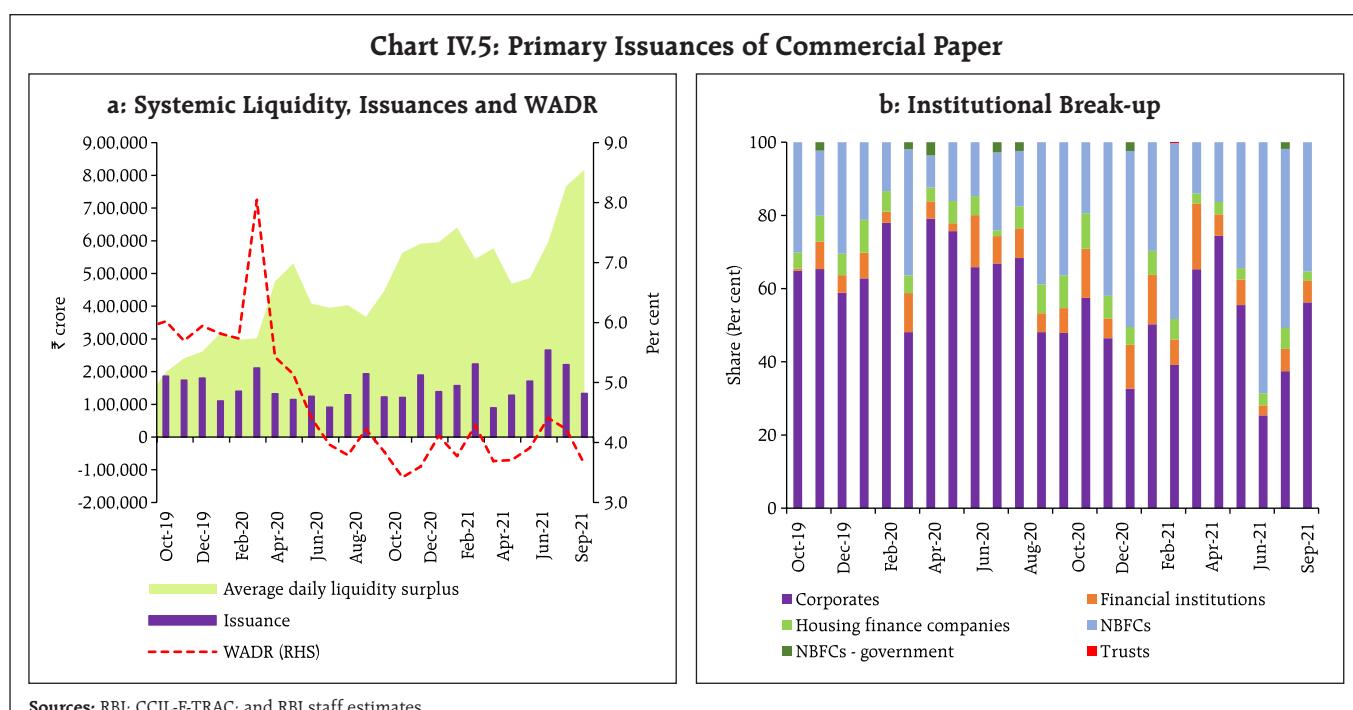
bps, respectively during H1:2021-22. Issuance of CDs increased to ₹56,658 crore during H1:2021-22 from ₹45,165 crore in the corresponding period of 2020-21, reflecting congenial financing conditions.

Riding on the surplus liquidity conditions, commercial paper (CP) issuances increased substantially to ₹10.1 lakh crore during H1:2021-22 from ₹7.9 lakh

crore during the corresponding period of 2020-21 (Chart IV.5a). CP rates generally traded above the reverse repo rate, with an average spread of 46 bps during H1:2021-22. The weighted average discount rate (WADR) firmed up in July 2021 due to increased issuances by non-banking financial companies (NBFCs), partly to mobilise resources for investment in initial public offerings (IPOs), but moderated subsequently. The share of NBFCs in total CP issuances increased to 43.2 per cent in H1: 2021-22 from 21.9 per cent in the corresponding period of the previous year while that of corporates moderated to 46.2 per cent from 64.9 per cent over the same period (Chart IV.5b).

#### IV.1.2 Government Securities (G-sec) Market

During H1:2021-22, the 10-year G-sec yield softened by 11 bps, aided by a host of measures taken by the Reserve Bank to foster an orderly evolution of the yield curve. During April-May 2021, the 10-year G-sec yield softened by 6 bps on (i) the monetary policy committee (MPC) continuing with its accommodative growth-supportive stances; (ii) the announcement of G-SAP 1.0 of ₹1 lakh crore for Q1; and (iii) special OMOs (operation twist) of ₹10,000 crore, although



fears of additional government borrowing to bridge the GST compensation cess shortfall imparted transient bearishness to market sentiment. Yields hardened in June by 8 bps over elevated May inflation print and higher crude oil prices. Overall, however, the 10-year yield remained range bound during Q1:2021-22.

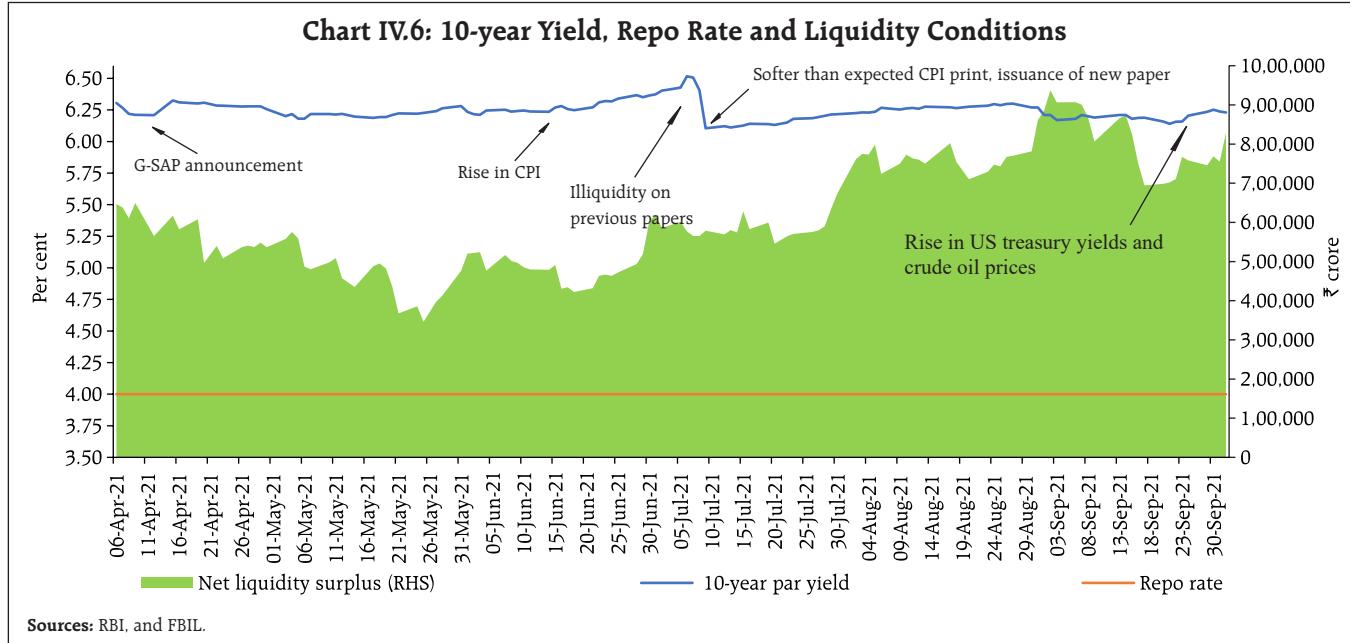
In Q2, the 10-year yield initially declined to 6.13 per cent on July 15, 2021 aided by a lower than expected CPI inflation print for June and issuance of a new 10-year benchmark security at a coupon of 6.10 per cent (Chart IV.6). In August, however, yields hardened by 5 bps in reaction to the MPC's inflation forecast being revised upwards above expectations and fears of liquidity tightening on the announcement of a calendar for an enhanced scale of variable rate reverse repo (VRRR) auctions. In the first half of September, yields softened as these apprehensions were allayed, along with (i) the resumption of portfolio debt inflows; (ii), lower than expected fiscal deficit of the central government for April-July; and (iii) a softer CPI inflation print. Yields, however, firmed up during the second half of the month tracking US treasury yields and hardening crude oil prices.

The dynamics of movements in the yield curve can be captured by its level and slope<sup>2</sup> (Chart IV.7a). While the average level of yields softened by 3 bps, the slope steepened by 28 bps during H1. Short term yields remained anchored around the policy rate while long term yields reflected inflation concerns and the size of the government borrowing programme (Chart IV.7b).

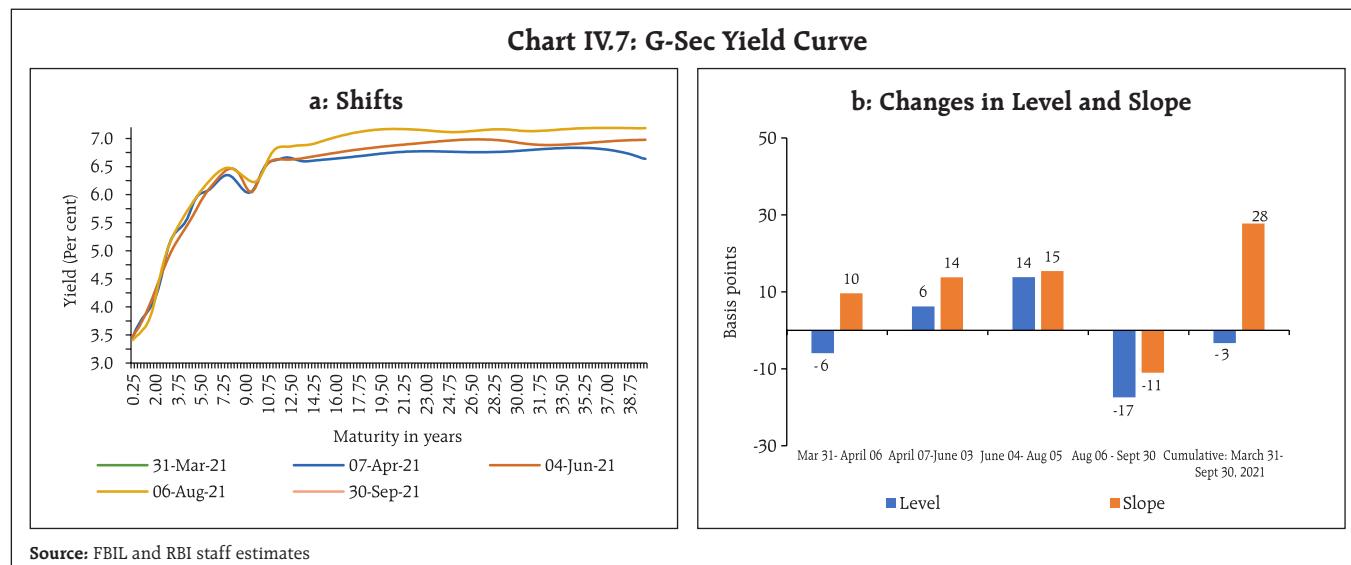
At the shorter end of the secondary market, yields on treasury bills (T-bills) softened and traded below the reverse repo rate for some maturities (Chart IV.8). In terms of the traded volume, 91-day T-bills remained the dominant segment in the secondary market with a share of about 41 per cent.

In order to facilitate debt consolidation, the Reserve Bank conducted six switch operations on behalf of the central government amounting to ₹31,907 crore during H1:2021-22. The weighted average maturity (WAM) of the outstanding stock of G-secs increased to 11.57 years at end-September 2021 from 11.31 years at end-March 2021. The weighted average coupon (WAC) moderated to 7.15 per cent from 7.27 per cent over the same period.

**Chart IV.6: 10-year Yield, Repo Rate and Liquidity Conditions**



<sup>2</sup> 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.

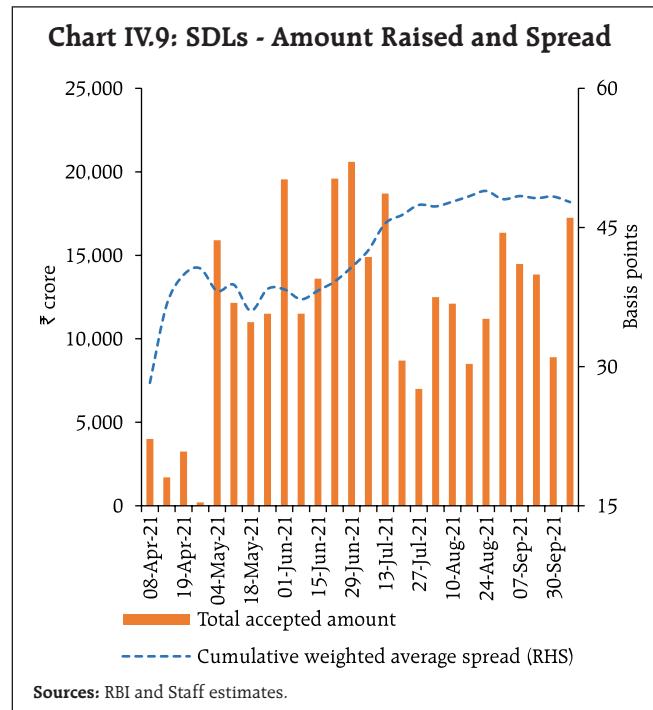
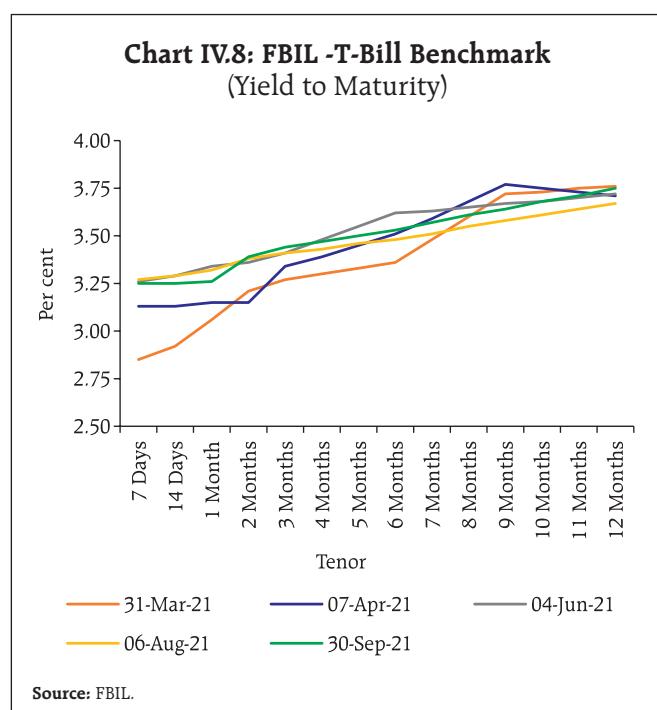


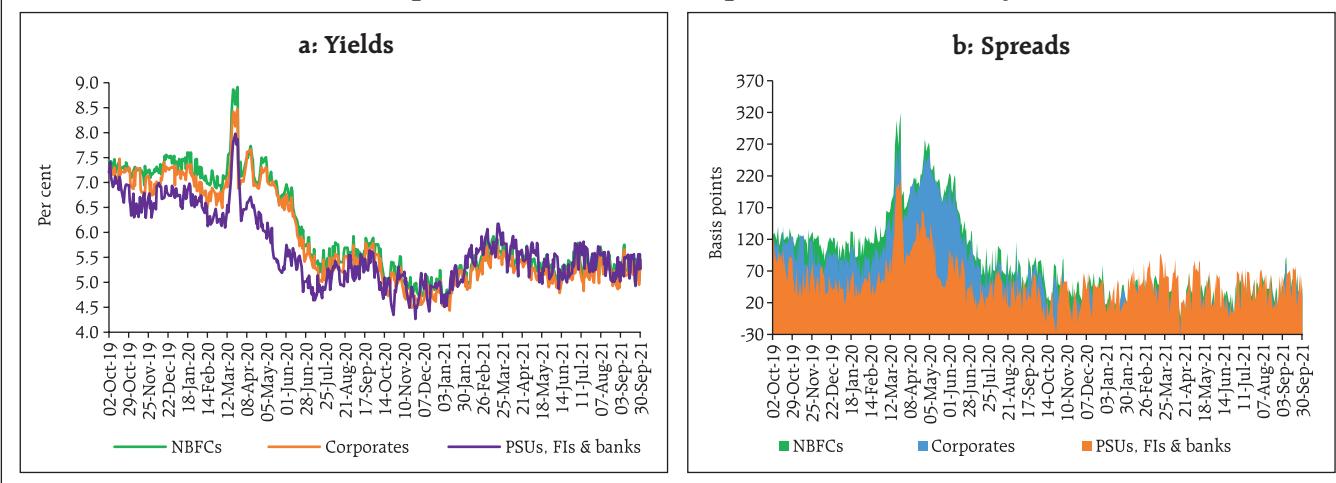
### State Development Loans

The weighted average spread of cut-off yields on state development loans (SDLs) over G-sec yields of comparable maturities declined to 48 bps in H1:2021-22 from 53 bps in H1:2020-21 (Chart IV.9). The average inter-state spread on securities of 10-year tenor (fresh issuances) was 4 bps in H1:2021-22 as compared with 9 bps in H1:2020-21.

### IV.1.3 Corporate Bond Market

Corporate bond yields softened during H1:2021-22 while risk premia (over G-sec yields of comparable maturities) exhibited a mixed trend amidst moderation in new issuances. The monthly average yield on AAA-rated 3-year bonds issued by NBFCs declined by 37 bps to 5.32 per cent, while those on corporates and public-sector undertakings (PSUs), financial institutions (FIs)



**Chart IV.10: Corporate Bond Yields and Spread on AAA-rated 3-year bonds**

and banks moderated by 32 bps to 5.24 per cent and by 48 bps to 5.33 per cent, respectively (Chart IV.10a). During the same period, the monthly average risk premium or spread on AAA-rated 3-year bonds (over 3-year G-sec yields) increased marginally from 48 bps to 49 bps for NBFCs and from 35 bps to 40 bps for corporates while moderating from 60 bps to 50 bps for PSUs, FIs and banks (Chart IV.10b).

Corporate bond yields eased across tenors and ratings spectrum. For the lowest rated investment grade corporate bonds (BBB-), yields declined by 18 bps (Table IV.1). The market perception of credit risk also improved, with the 3-year credit default swap (CDS) spreads for the State Bank of India and the ICICI Bank moderating by 2 bps and 3 bps, respectively, during H1.

Issuances of corporate bonds in the primary market declined to ₹1.81 lakh crore during H1:2021-22 (up to August 2021) from ₹3.17 lakh crore during the corresponding period of the previous year (Chart IV.11a). Resource mobilisation in the corporate bond market was overwhelmingly through the private placement route (97.0 per cent).

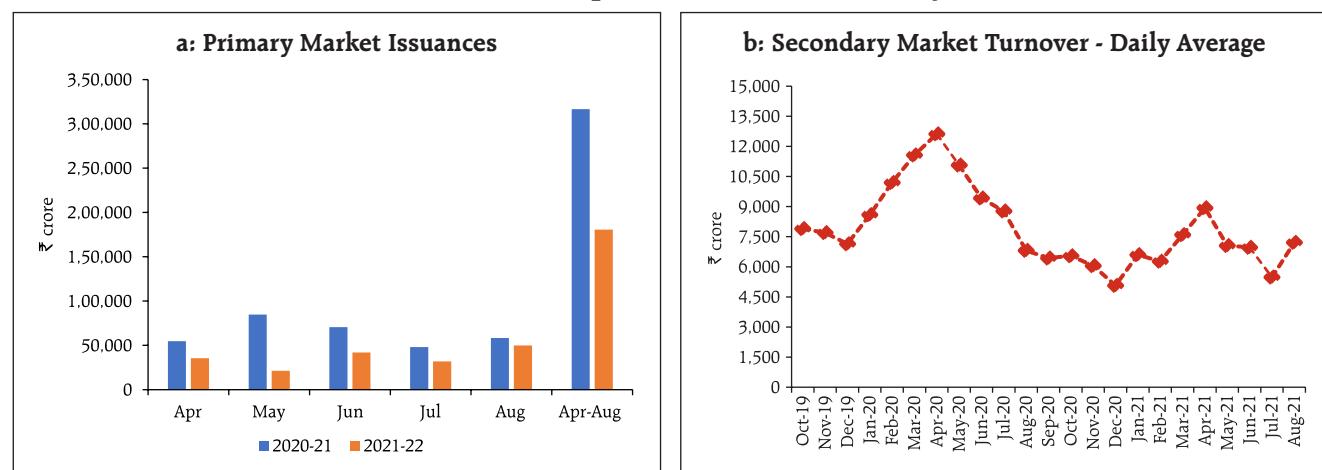
Outstanding investments by foreign portfolio investors (FPIs) in corporate bonds declined marginally from ₹1.33 lakh crore at end-March 2021 to ₹1.28 lakh crore at end-September 2021. Consequently, their utilisation of the approved limits declined from 24.5 per cent to 22.3 per cent. The daily average secondary market trading volume declined by 26.0 per cent to ₹7,056 crore during H1 (up to August 2021) over the corresponding period of

**Table IV.1: Financial Markets - Rates and Spread**

Instrument	Interest Rates (per cent)			Spread (bps) (over corresponding risk-free rate)		
	Mar 2021	Sep 2021	Variation (in bps)	Mar 2021	Sep 2021	Variation (in bps)
1	2	3	(4 = 3-2)	5	6	(7 = 6-5)
Corporate Bonds						
(i) AAA (1-yr)	4.30	4.17	-13	32	35	3
(ii) AAA (3-yr)	5.56	5.24	-32	35	40	5
(iii) AAA (5-yr)	6.27	5.88	-39	17	4	-13
(iv) AA (3-yr)	6.31	6.07	-24	110	124	14
(v) BBB-minus (3-yr)	10.17	9.99	-18	496	516	20
10-yr G-sec	6.19	6.18	-1			

Note: Yields and spreads are computed as monthly averages.

Source: FIMMDA and Bloomberg.

**Chart IV.11: Corporate Bond Market Activity**

Source: SEBI.

the previous year, in sync with the reduction in new issuances (Chart IV.11b).

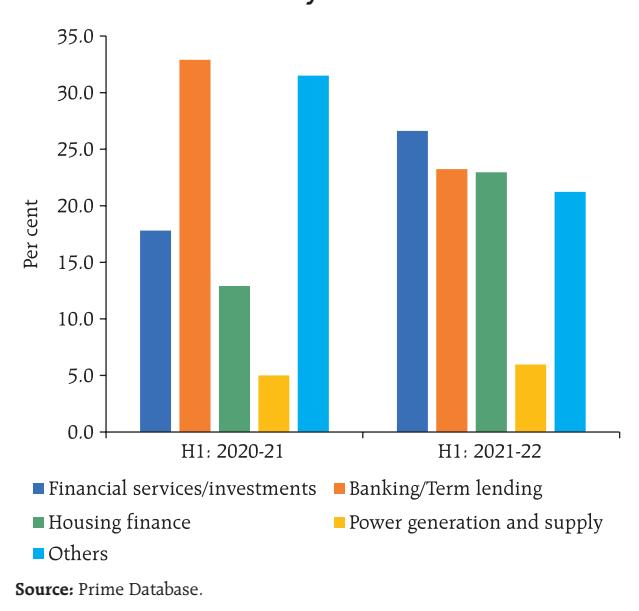
Most of the debt issuances in H1:2021-22 were undertaken by firms in financial services, banking/term lending, and the housing finance sector (Chart IV.12).

#### IV.1.4 Equity Market

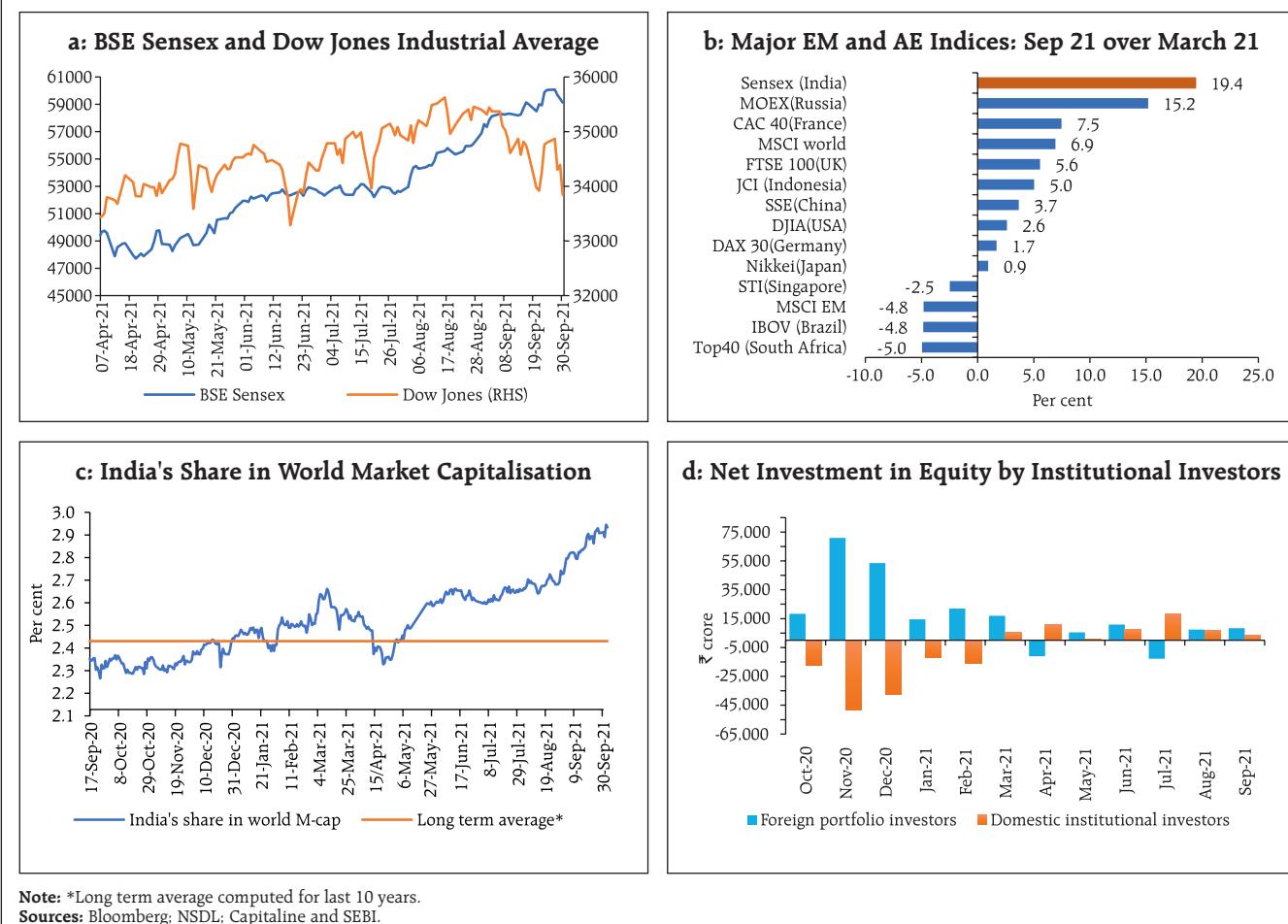
The Indian equity market scaled new highs in H1:2021-22, lifted by the gradual normalisation

of economic activity post the second wave, strong corporate earnings, and pick-up in the vaccination drive. The BSE Sensex gained 19.4 per cent in H1 to close at 59,126 on September 30, 2021 (Chart IV.13a). Indian equities emerged as the best performing amongst peers on a year to date (YTD) basis (Chart IV.13b) with their share in world market capitalisation increasing to 2.93 per cent on September 30, 2021 from the long-term average of 2.43 per cent (Chart IV.13c). During H1:2021-22, FPIs were net buyers to the tune of ₹ 8,326 crore while net purchases of domestic institutional investors (DIIs) amounted to ₹47,763 crore (Chart IV.13d).

The bull run rode on higher domestic participation, buoyed by the increasing interest of retail investors. Direct retail holdings in NSE listed stocks rose to 7.2 per cent of market capitalisation in June 2021 from 6.4 per cent in December 2019 (Chart IV.14a). The number of dematerialised (Demat) accounts with the country's two main depositories has gone up from 5.5 crore at end-March 2021 to 6.49 crore at end-July 2021. Furthermore, indirect retail participation through monthly systematic investment plans (SIPs) reached a new high of ₹9,923 crore in August – 8.1 per cent above March 2021. The number of retail SIP accounts surged to 4.3 crore with 24.9 lakh new accounts registered

**Chart IV.12: Industry-wise Debt Issuances**

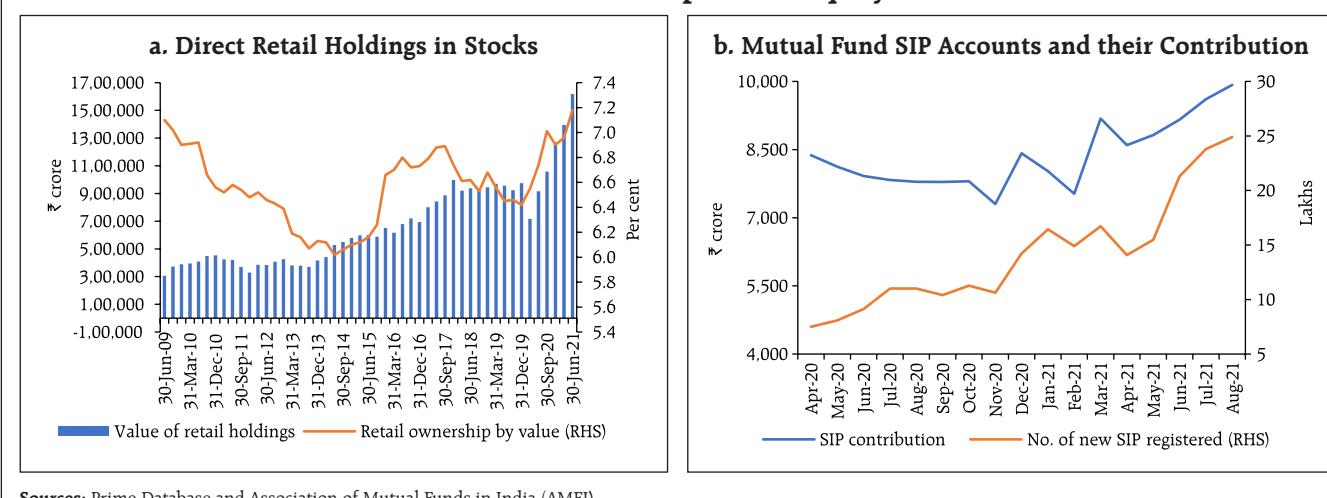
### Chart IV.13: Stock Market Indices and Institutional Investments

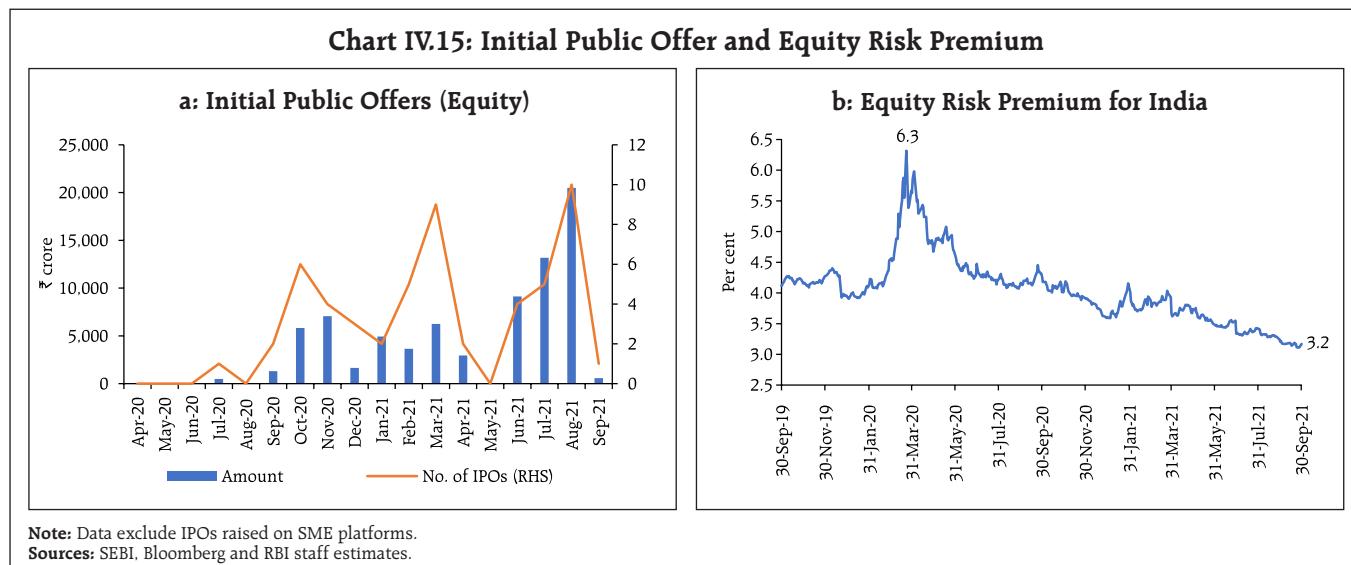


in August – the highest-ever monthly registration (Chart IV.14b).

The exuberance in the equity market was also reflected in the IPO segment. During H1:2021-22,

### Chart IV.14: Retail Participation in Equity Market





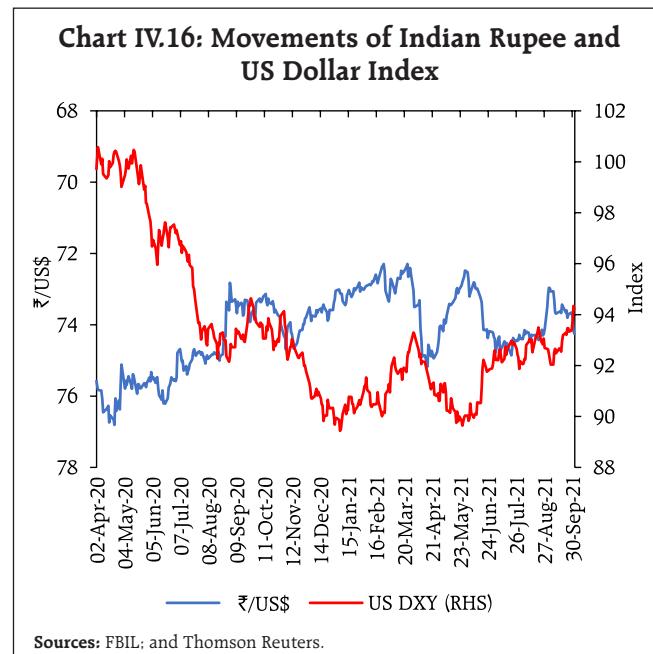
22 IPOs were listed, mobilising ₹46,316 crore as against ₹1,798 crore in the corresponding period last year (Chart IV.15a). The amounts raised through rights issues, however, fell sharply to ₹793 crore in H1 from ₹59,983 crore during the corresponding period of the previous year. The total mobilisation through public and rights issues reduced to ₹50,529 crore from ₹76,830 crore over the same period.

The equity risk premium (ERP)<sup>3</sup> – the difference between returns on equity and the risk-free rate – eased through H1:2021-22 with the gradual recovery in market sentiments and moderated from 6.3 per cent at the height of the pandemic (end-March 2020) to 3.2 per cent by end-September 2021, moving below the pre-pandemic level (Chart IV.15b).

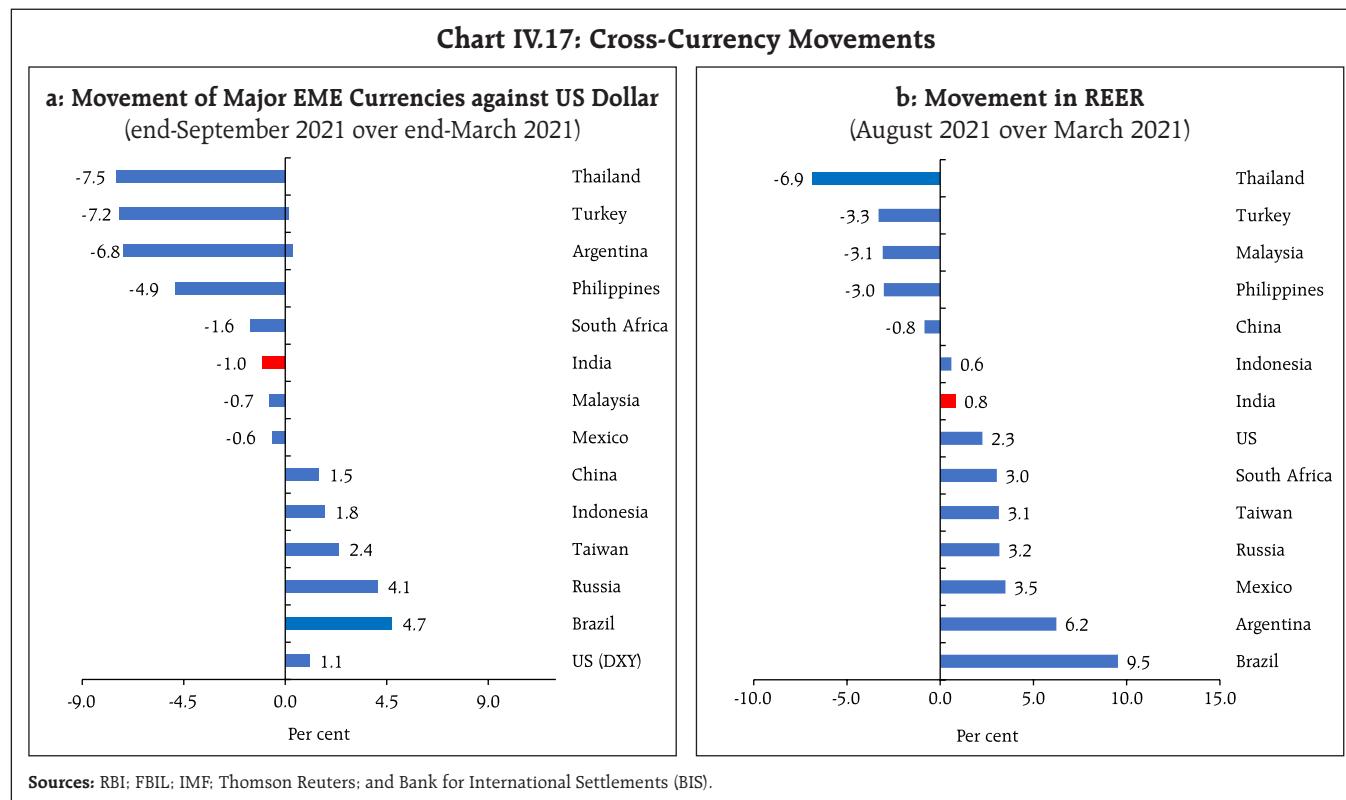
#### IV.1.5. Foreign Exchange Market

The Indian rupee (INR) exhibited two-way movements in H1:2021-22. It traded with a depreciating bias in April 2021 and touched ₹75.17 per US dollar on April 15 amidst FPI outflows and an appreciation

of the US dollar (Chart IV.16). The depreciating bias quickly reversed as FPI flows rebounded with a sharp fall in domestic COVID-19 cases and a weakening US dollar. By May 28, the INR appreciated to ₹72.48. In June, it traded with a depreciation bias, despite robust FPI equity inflows, as the US dollar gained traction. Since then, the INR has moved in both directions driven by FPI flows, crude oil prices and incoming



<sup>3</sup> Sachdeva, P. and A. Borad (2020), "Demystifying Equity Prices using Dividend Discount Model: An Indian Context", *Reserve Bank of India Bulletin*, October.



information on monetary policy normalisation plans of major advanced economies.

The depreciation of the INR in nominal terms (against the US dollar) as well as the appreciation of the real effective exchange rate (REER) in H1 was modest relative to EME peers (Chart IV.17).

In terms of the 40-currency nominal effective exchange rate (NEER), the INR depreciated by 0.9 per cent (at end-September 2021 over the average of March 2021), while it appreciated by 1.3 per cent in terms of the 40-currency REER (Table IV.2). The divergence between the two indices essentially reflects India's higher inflation *vis-à-vis* its major trading partners.

#### IV.1.6 Credit Market

During H1, credit offtake improved, with non-food credit growth (y-o-y) increasing to 6.8 per cent on September 24, 2021 from 5.1 per cent a year ago (Chart IV.18).

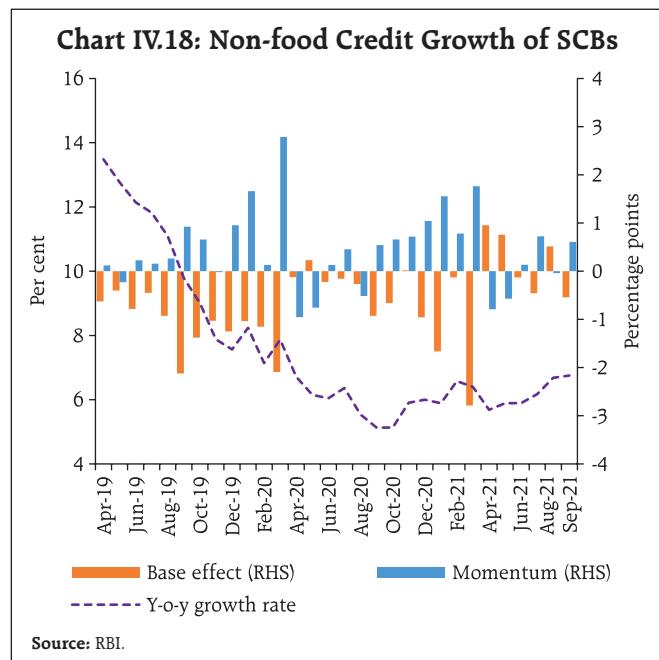
**Table IV.2: Nominal and Real Effective Exchange Rate Indices (Trade-weighted)**  
(Base: 2015-16 = 100)

Item	Index: end-September 2021 (P)	Appreciation (+) / Depreciation (-) (Per cent)
		end-September 2021 over March (average) 2021
40-currency REER	105.3	1.3
40-currency NEER	94.2	-0.9
6-currency REER	103.2	1.5
6-currency NEER	87.6	-1.1
₹/US\$	74.26	-2.0

P: Provisional.

Sources: RBI; and FBIL.

Credit growth among public sector banks remained modest, while there has been some uptick in the case of the private sector banks (Chart IV.19a), which have provided the bulk (56.7 per cent) of the incremental credit extended by scheduled commercial banks (SCBs) on a y-o-y basis (as on September 24, 2021). They were followed by public sector banks

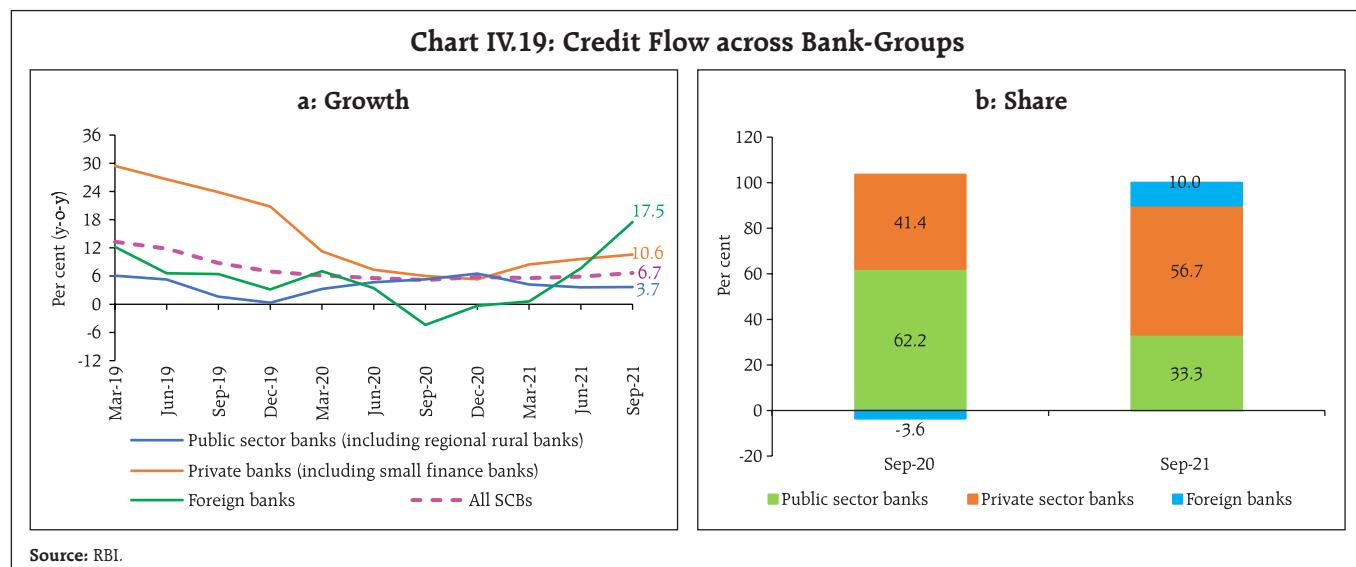


(33.3 per cent) and foreign banks (10.0 per cent) (Chart IV.19b).

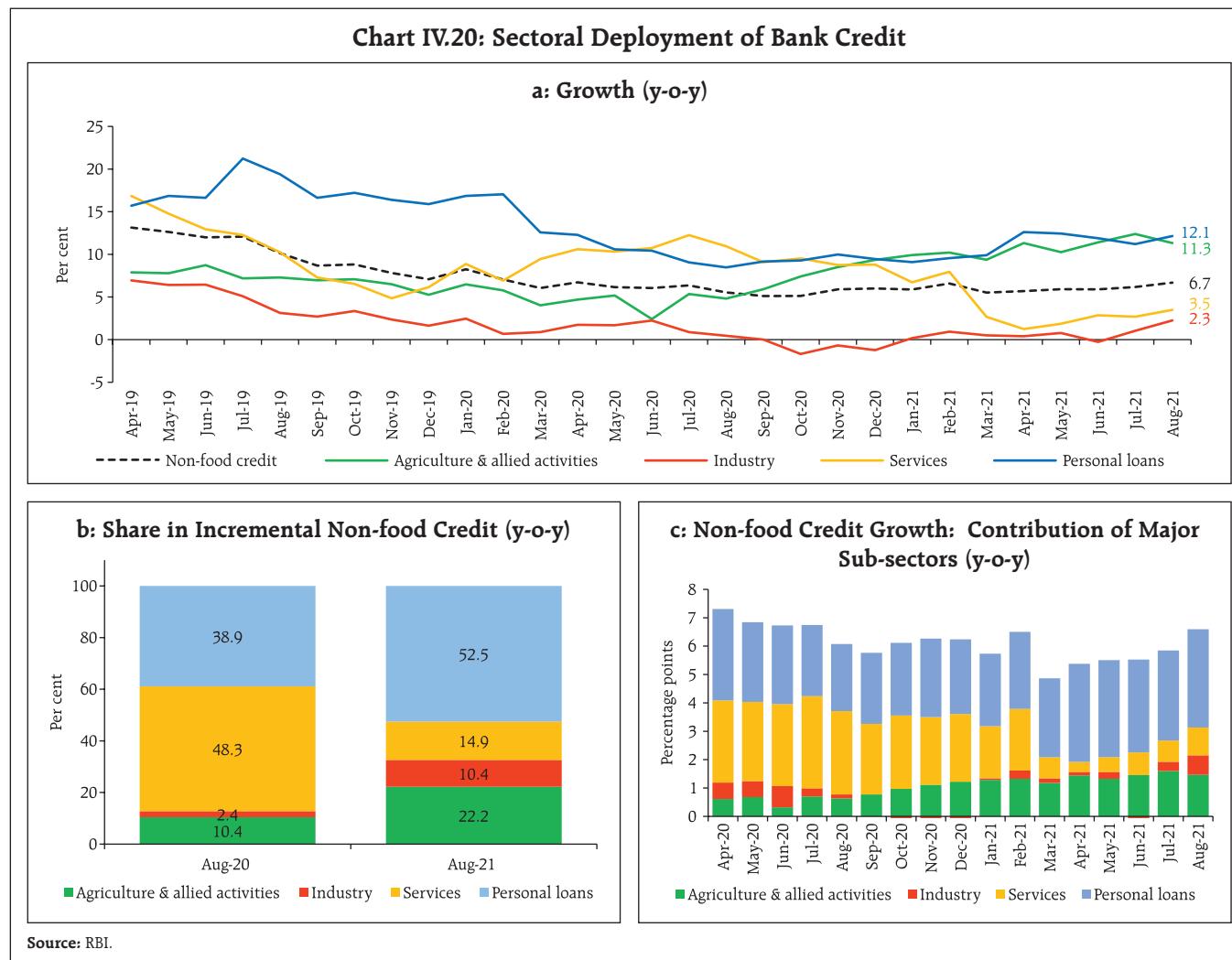
Among the major sectors<sup>4</sup>, credit to agriculture continued to register double-digit growth since April 2021 and accelerated to 11.3 per cent

(y-o-y) in August 2021 on the back of a favourable monsoon and measures to support the farm sector (Chart IV.20a). Industrial credit growth remained subdued, mainly due to a decline in credit to large industries (which account for more than 80 per cent of credit extended to the sector). Credit to medium, and micro and small industries improved, benefitting from the government's support measures for the MSME sector and the enhancement of the emergency credit line guarantee scheme (ECLGS) to support COVID-19 affected sectors. Services sector credit growth decelerated, dampened by the second wave of the pandemic. In terms of the contribution of different sectors in incremental credit (y-o-y basis), personal loans accounted for the largest share (52.5 per cent) followed by the agriculture sector (22.2 per cent) (Chart IV.20b). The overall non-food credit growth in H1:2021-22 remains primarily driven by personal loans and credit to the agriculture sector (Chart IV.20c).

Within industry, credit to textiles, and chemicals and chemical products registered accelerated growth



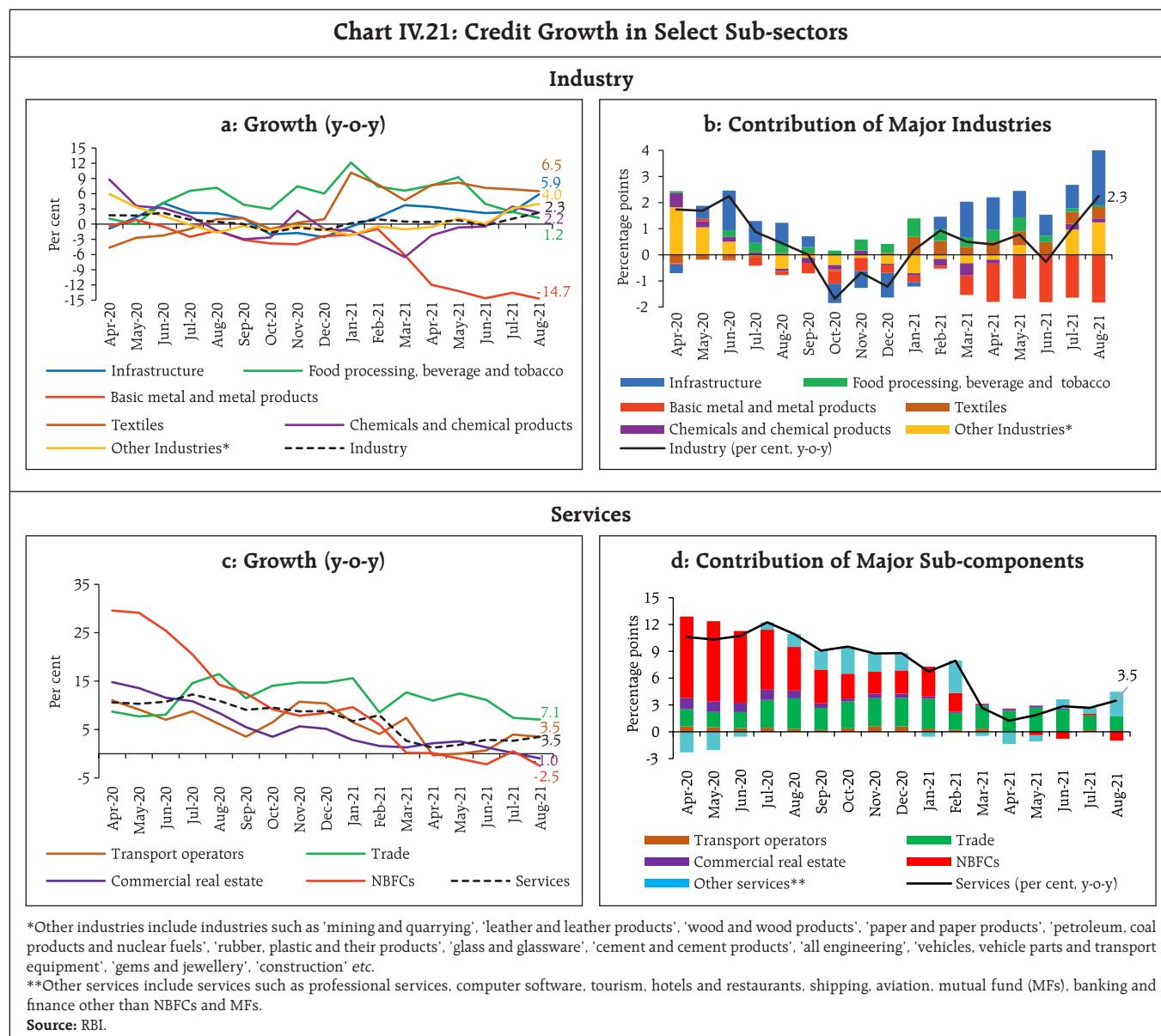
<sup>4</sup> Data on sectoral credit relate to select banks accounting for around 90 per cent of the total non-food credit.



in H1:2021-22 (up to August). Credit to infrastructure – which accounts for around 38 per cent of industrial credit – also showed improvement, led by credit to roads and airports. Credit growth to food processing, beverage and tobacco lost momentum, while credit to basic metal and metal products contracted (Chart IV.21a). The prime drivers of overall credit growth to industry were infrastructure and textiles (Chart IV.21b).

Credit growth to the services sector decelerated to 3.5 per cent in August 2021 from 10.9 per cent a year ago, largely due to slowdown in credit to NBFCs that

have been raising resources mainly from money and debt markets. Credit growth to transport operators, however, recovered in August 2021 after slipping into negative territory in April 2021 (Chart IV.21c). Credit to the trade sector contributed 1.5 percentage points to the overall credit growth of the services sector in August 2021 (Chart IV.21d). Credit growth to personal loan segment accelerated to 12.1 per cent in August 2021 from 8.5 per cent a year ago, supported by special schemes of banks to support households during the pandemic. Credit to housing, the largest constituent of the personal loan segment, showed signs of recovery in H1: 2021-22 (up to August 2021).

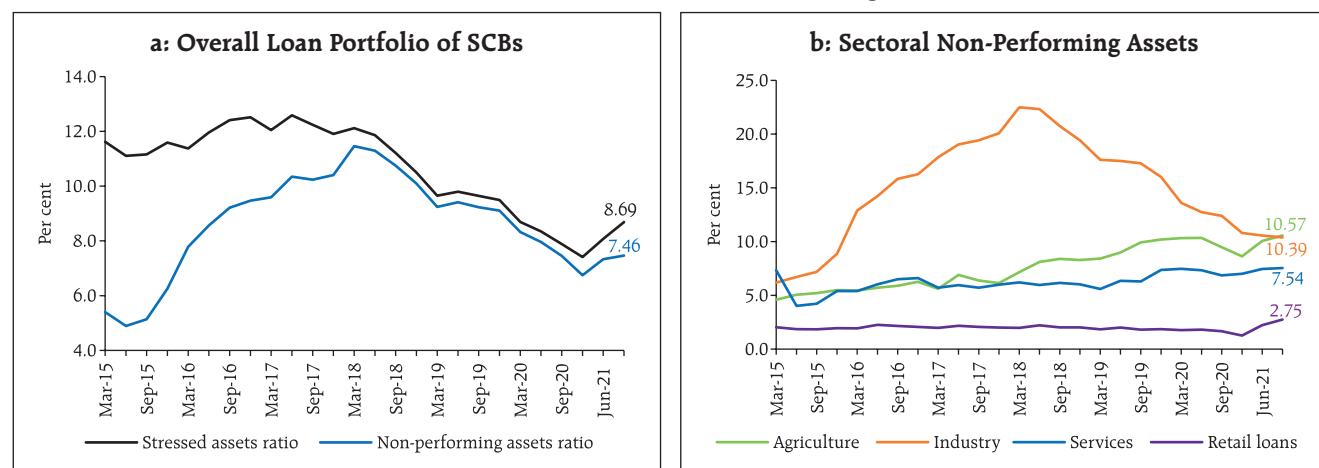


The asset quality of SCBs improved during 2021-22 (up to June), with the overall non-performing assets (NPA) ratio declining to 7.5 per cent in June 2021 from 8.0 per cent a year ago (Chart IV.22a). The NPA ratio in respect of retail loans and services increased over the same period (Chart IV.22b).

Banks' non-SLR investments—covering instruments like CPs, bonds, debentures and shares of public and

private corporates – were lower during H1:2021-22 than a year ago mainly due to lower investment in bonds/shares and debentures (Chart IV.23a). Adjusted non-food credit<sup>5</sup> growth increased from 5.1 per

<sup>5</sup> Sum of non-food credit extended by SCBs and their investments in commercial paper, bonds/shares/debentures issued by private and public corporate sector.

**Chart IV.22: Stressed Assets and Non-Performing Assets of SCBs**

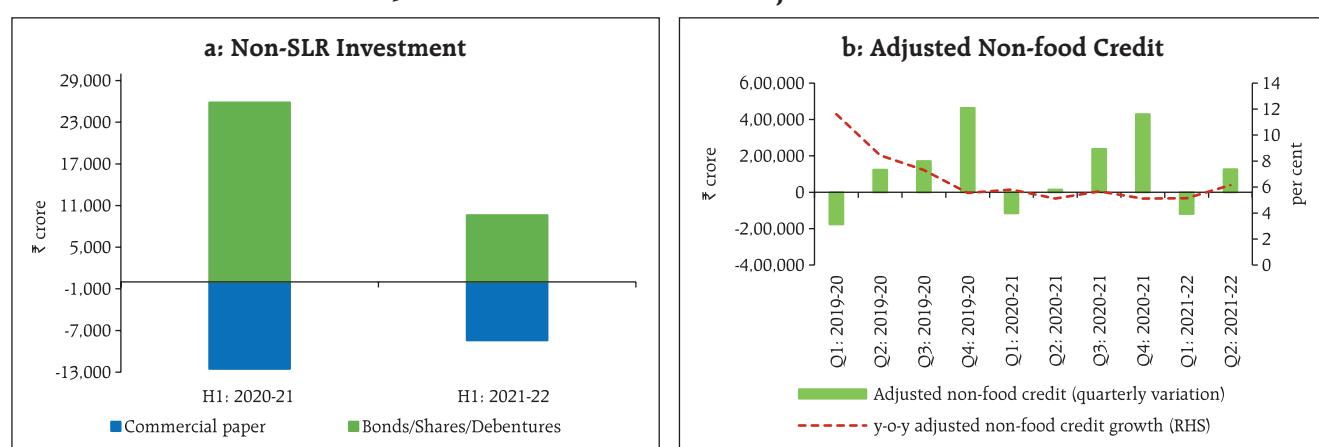
cent in Q2:2020-21 to 6.2 per cent in Q2:2021-22 (Chart IV.23b).

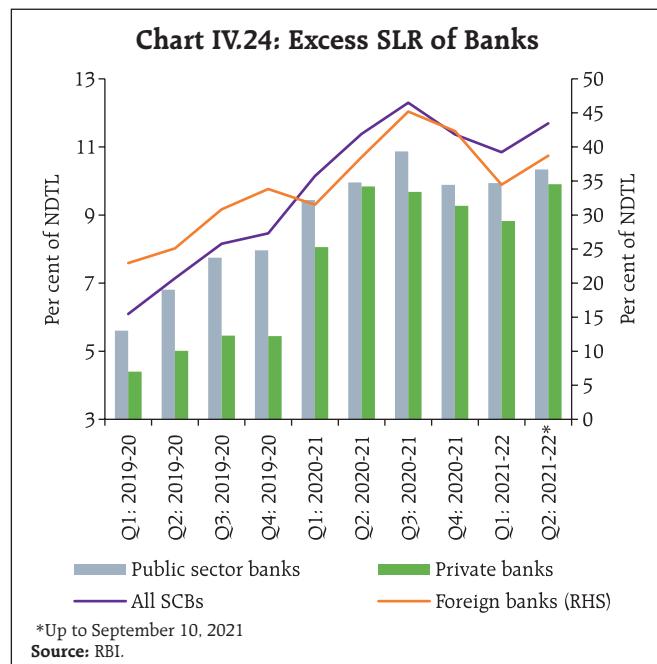
With credit offtake remaining muted relative to deposit growth, banks augmented their statutory liquidity ratio (SLR) portfolios. Excess SLR investments rose to 12.5 per cent of net demand and time liabilities (NDTL) on September 10, 2021 from 11.0 per cent of NDTL at end-March 2021. This provides banks the cushion to meet their liquidity coverage ratio (LCR)

requirements and collateral buffers for availing the liquidity adjustment facility (LAF) of the RBI (Chart IV.24).

#### IV.2 Monetary Policy Transmission

Monetary transmission to deposit and lending rates of banks improved further in H1:2021-22. The abundance of systemic liquidity, forward guidance by the MPC of continuing with the accommodative

**Chart IV.23: Non-SLR Investment and Adjusted Non-Food Credit**



stance, subdued credit demand and the introduction of the external benchmark regime for select sectors in October 2019 aided monetary transmission. There has been a complete pass-through of the policy repo rate cuts to the weighted average lending rate (WALR) on fresh rupee loans since October 2019 (Table IV.3).

The transmission of policy repo rate cuts to the WALR on outstanding loans has also been sizeable at 120 bps in the external benchmark period (Box IV.1).

**Table IV.3: Transmission from the Repo Rate to Banks' Deposit and Lending Rates**  
(Variation in basis points)

Period	Repo Rate	Term Deposit Rates		Lending Rates		
		Median TDR (Fresh Deposits)	WADTDR (Out-standing Deposits)	1 - Year Median MCLR	WALR (Out-standing Rupee Loans)	WALR (Fresh Rupee Loans)
February 2019 - September 2019 (Pre-External Benchmark Period)	-110	-9	-7	-30	2	-43
October 2019 - September 2021 (External Benchmark Period)	-140	-187	-174	-125	-120	-147
March 2020 - September 2021 (COVID period)	-115	-154	-135	-103	-102	-121
February 2019 – September 2021 (Current Easing Cycle)	-250	-213	-181	-155	-118	-190

*Memo*

April 2021 – September 2021	0	0	-18	-5	-12	1
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**Note:** Latest data on WALRs and WADTDR pertain to August 2021.

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

MCLR: Marginal cost of funds-based lending rate; TDR: Term deposit rate.

**Source:** RBI.

**Box IV.1: External Benchmark Regime and Transmission to Lending Rates**

While the Reserve Bank has periodically refined the process of interest rate setting by banks, transmission has hitherto been sluggish as banks relied on own cost of funds, i.e., internal benchmarks. The systems were also characterised by opacity, especially regarding the interest rate resetting practices for existing borrowers. To address these rigidities, the Reserve Bank decided to move to an external benchmark system – an interest rate outside the control of a bank and not necessarily linked to its internal costs – for select categories of loans (*viz.*, all new floating rate personal or retail loans and floating rate loans to micro and small enterprises (MSEs) to the policy repo rate or 3-month or 6-month T-bill rate or other specified

benchmarks effective October 1, 2019 and for medium enterprises effective April 1, 2020).

Under this system, any change in the benchmark rate is mandated to be passed on to the lending rates for new and existing borrowers on a one-to-one basis and banks are prohibited from adjusting their spreads for existing borrowers for a period of three years in the absence of any significant credit event. Reflecting the regulatory requirement, the share of external benchmark-linked loans in total outstanding floating rate loans increased from 2.4 per cent in September 2019 to 32 per cent in June 2021, contributing to a faster and fuller transmission.

(Contd.)

**Table IV.1.1: Outstanding Floating Rate Rupee Loans of SCBs across Interest Rate Benchmarks**

(Per cent to total)

Bank group	Base Rate				MCLR				External Benchmark			
	Sep-19	Mar-20	Mar-21	Jun-21	Sep-19	Mar-20	Mar-21	Jun-21	Sep-19	Mar-20	Mar-21	Jun-21
Public sector banks	15.0	12.3	7.9	8.1	82.7	80.9	69.1	66.5	0.4	4.9	20.3	23.9
Private banks	8.3	6.8	3.9	3.6	86.7	74.9	52.6	49.6	4.6	17.3	42.7	46.1
Foreign banks	6.8	5.2	2.7	2.7	67.3	56.7	30.7	33.5	25.7	37.9	66.6	63.7
All SCBs	12.7	10.5	6.5	6.5	83.6	78.5	62.9	60.2	2.4	9.4	28.5	32.0

Note: Data pertain to 74 SCBs. Figures in table may not add up to hundred due to residual BPLR-linked loans.

Source: RBI.

There has been a concomitant fall in the share of MCLR-linked loans from 83.6 per cent to 60.2 per cent, over the same period, although these still have the largest share in outstanding floating rate loans (Table IV.1.1).

As lending rates under the external benchmark regime undergo automatic adjustments with the changes in the benchmark rate, banks are incentivised to adjust their term as well as saving deposit rates to cushion their net interest margins and profitability, which then hastens the adjustment in banks' marginal cost of funds, and MCLRs (Chart IV.2.1). An error correction model (ECM) using the autoregressive distributed lag (ARDL) framework (Pesaran *et al.*, 2001) for the period January 2013 to June 2021 with the following variables – weighted average lending rate on fresh rupee loans (*WALR\_f*), repo rate (*REPO*) and credit to deposit ratio (*CD Ratio*) – indicates that a 100

bps change in the repo rate results in 93 bps change in the *WALR* on fresh loans over time (equation 1)<sup>6</sup>.

$$\Delta \text{WALR}_f = -1.18 + 0.93 \text{ REPO} + 0.21 \text{ CD Ratio} \quad \dots \dots (1)$$

(0.18) (0.00) (0.07)

$$\Delta \text{WALR}_f = -0.56 \Delta \text{WALR}_{f-1} - 0.34 \Delta \text{WALR}_{f-2} + 0.30 \Delta \text{REPO}_t - 0.01 \Delta \text{CD Ratio}_t + \dots \dots (2)$$

(0.0) (0.00) (0.01) (0.39)

$$0.40 (\Delta \text{REPO}_t) * (\text{DUM}_{EBLR}) - 0.10 \text{ DUM}_{DEMO} + 0.19 \text{ DUM}_{TAPR} - 0.11 \text{ ECT}_{t-1} \dots \dots (2)$$

(0.03) (0.10) (0.00) (0.00)

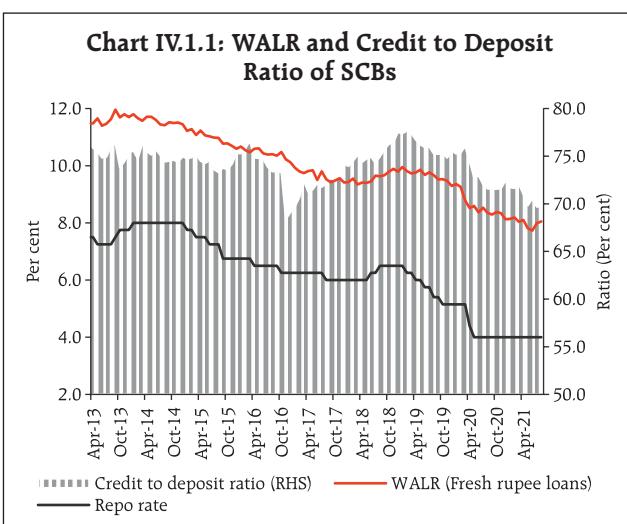
Notes: Figures in parentheses are *p*-values; Adjusted  $R^2 = 0.35$ ; Breusch-Godfrey LM test for null of no serial correlation (6 lags) (*p*-value) = 0.88;  $\Delta$  represents month-on-month change in the respective variables.

The adjustment, however, takes time as indicated by the error correction coefficient of 0.11 (equation 2), i.e., 11 per cent of the deviation from the equilibrium relationship is corrected every month<sup>7</sup>. Thus, it takes six months for one-half of the long-run pass-through. The speed of adjustment can be expected to improve as the proportion of external benchmark linked loans increases further. This is borne out by the statistical significance of the interaction between the changes in the repo rate and the dummy representing the external benchmark period ( $\Delta \text{REPO}_t * \text{DUM}_{EBLR}$ ).

#### References:

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001), "Bounds Testing Approaches to the Analysis of Level Relationships", *Journal of Applied Econometrics*, 16, 289-326.

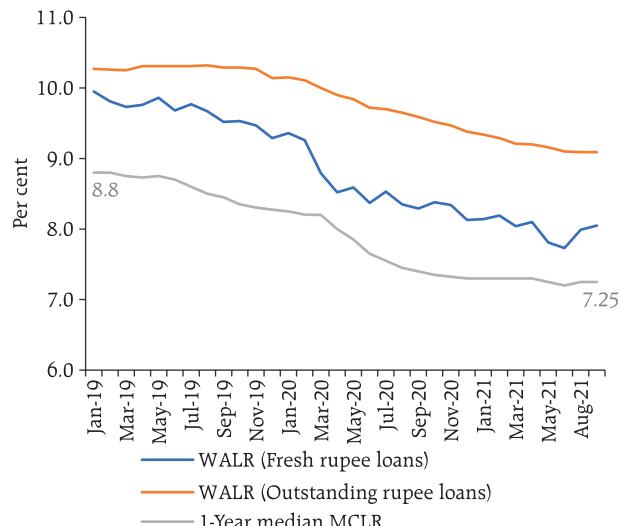
Reserve Bank of India (2017), "Report of the Internal Study Group to Review the Working of the Marginal Cost of Funds-based Lending Rate System".



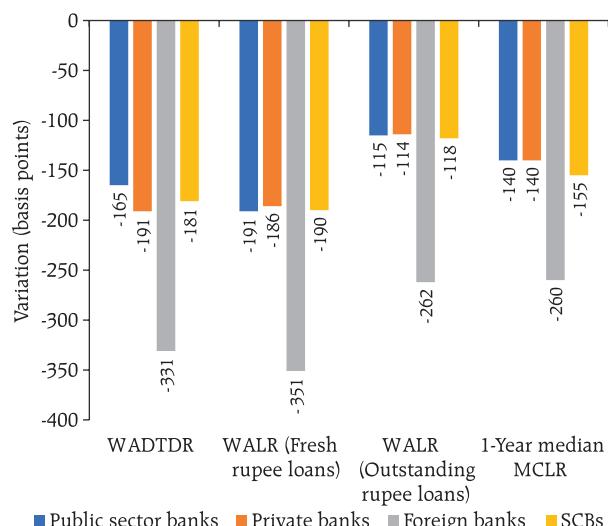
<sup>6</sup> Unit root tests indicate that *WALR\_f*, *REPO* and *CD Ratio* are I(1). Based on AIC criteria, ARDL(3,1,1) model is selected. Bounds test confirms cointegration at 1 per cent level of significance.

<sup>7</sup> In equation 2, *Dum<sub>EBLR</sub>* is dummy for the external benchmark period, i.e., October 2019 to June 2021; *Dum<sub>TAPR</sub>* is dummy for taper tantrum period (July to September 2013); and *Dum<sub>DEMO</sub>* is dummy for the demonetisation period (November 2016 to February 2017).

**Chart IV.25: Lending Rates of Scheduled Commercial Banks**



**Chart IV.26: Transmission across Bank-Groups (February 2019 - August 2021)**



This has been facilitated by the sustained reduction in the marginal cost of funds-based lending rate (MCLR) – the one-year median MCLR fell from 8.8 per cent in January 2019 to 7.25 per cent in August 2021 (Chart IV.25)<sup>8</sup>.

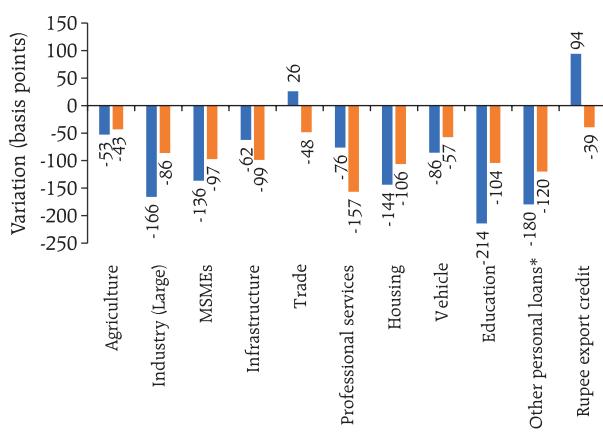
Across bank groups, foreign banks exhibited maximum transmission to lending and deposit rates, reflecting a higher proportion of their liabilities being made up of low cost and lower duration wholesale deposits, which facilitates a faster repricing of interest rates (Chart IV.26). Among domestic banks, public sector banks (PSBs) and private sector banks (PvBs) exhibited a similar degree of pass-through to lending rates. The WALRs of PSBs, however, remain lower than those of PvBs<sup>9</sup>.

The decline in WALRs on fresh rupee loans as well as outstanding rupee loans has been broad-

based across sectors. For fresh loans, the decline in WALR was the sharpest in the case of education loans, followed by other personal loans and loans to large industries (Chart IV.27).

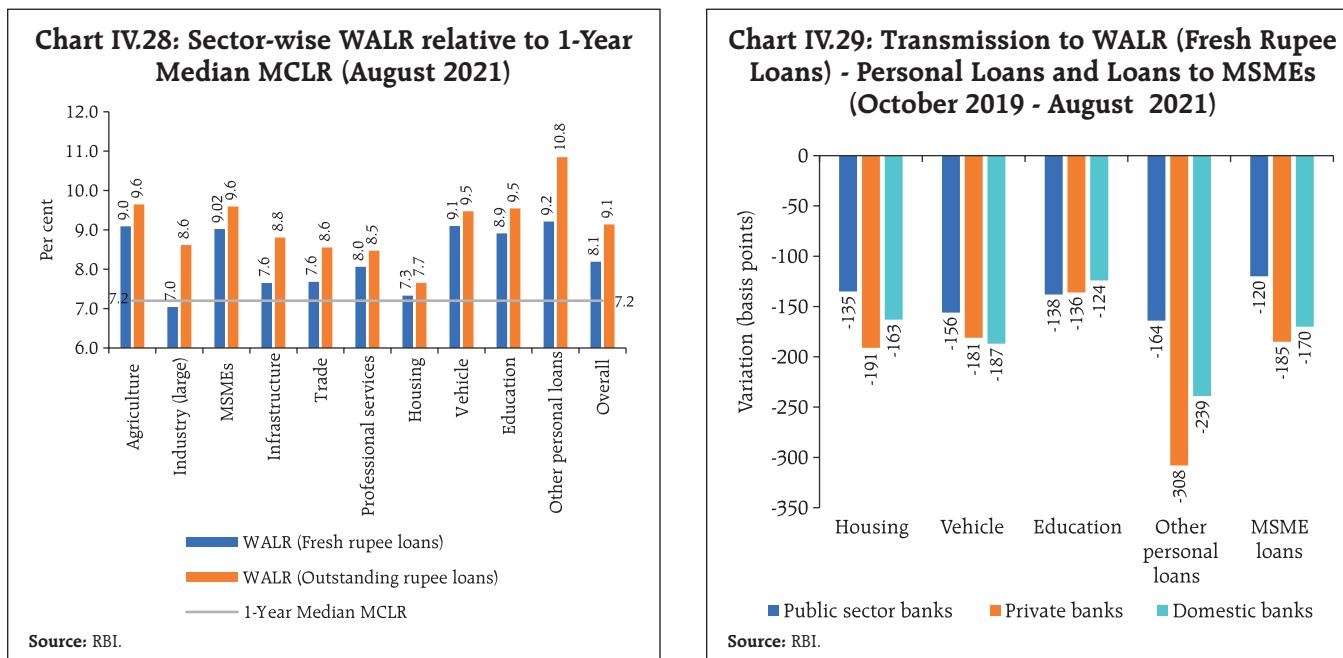
Spreads of WALRs on fresh rupee loans (relative to 1-year MCLR) are the lowest in the large industry

**Chart IV.27: Transmission to WALR - Sector-wise (April 2020 - August 2021)**



<sup>8</sup> With the policy rate cut cycle commencing in February 2019, more and more loans linked to MCLR (primarily in the 1-year bucket) are getting reset from February 2020.

<sup>9</sup> The WALR on fresh rupee loans for public sector banks and private sector banks stood at 7.51 per cent and 8.83 per cent, respectively, in August 2021.



segment. Among retail loans, the spread charged by domestic banks was the lowest in respect of housing loans, given the lower risk of default and the availability of collateral. Other personal loans, i.e., loans other than housing, vehicle and education are mostly unsecured and carry higher credit risk, mirrored in higher spreads (Chart IV.28).

The WALRs in respect of fresh rupee loans in the retail segment and loans to MSMEs declined significantly during the period October 2019-August 2021 (Chart IV.29).

In respect of fresh rupee loans linked to the policy repo rate, the spread – WALR (fresh rupee loans) over the repo rate – charged by domestic banks during August 2021 was the lowest in the case of housing loans and the highest in the case of other personal loans, in line with their risk profiles. The spreads charged by PSBs for vehicle and education loans were lower than those of private banks, while they were higher for MSME loans and other personal loans (Table IV.4).

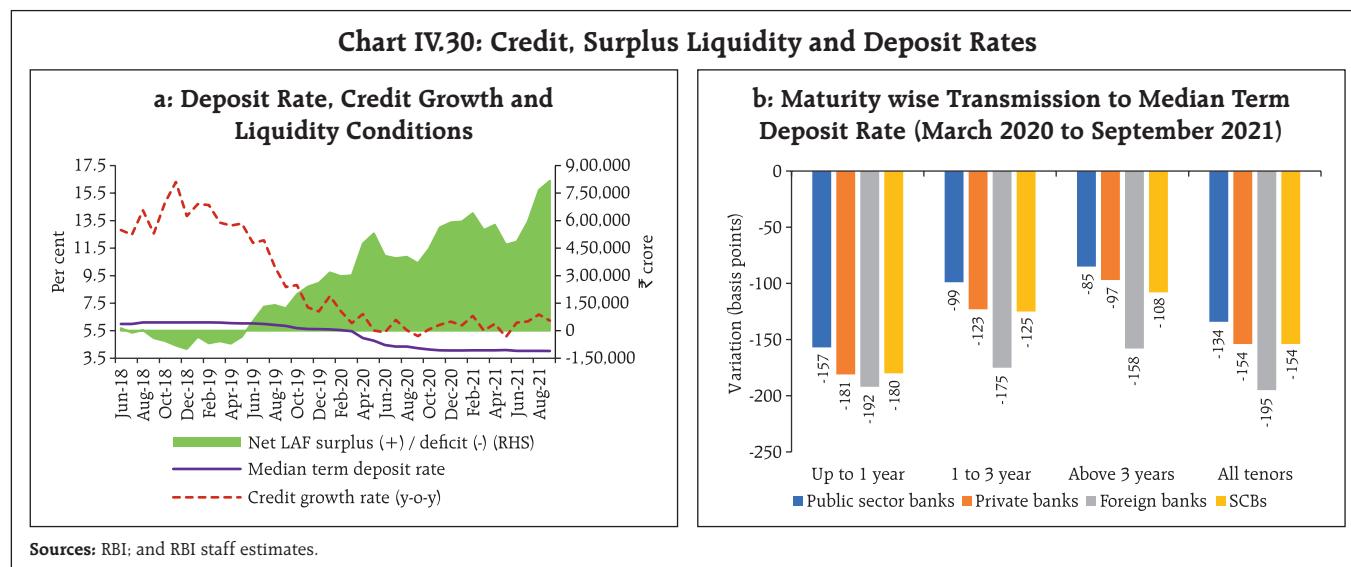
There has been a moderation in deposit rates across tenors (Chart IV.30a). The median term deposit rate on fresh deposits – based on average card rates on fresh deposits across all tenors – has declined by 154 bps since March 2020 with a perceptible moderation in shorter tenor deposits of up to one-year maturity (180 bps) (Chart IV.30b). Consequently, the weighted average domestic term deposit rate (WADTDR) on outstanding rupee deposits declined by 135 bps during the period March 2020 to August 2021. The median saving deposit rate for domestic banks, which had remained sticky at 3.5 per cent during October

**Table IV.4: Loans Linked to External Benchmark – Spread of WALR (Fresh Rupee Loans) over the Repo Rate (August 2021)**

(Per cent)

	Personal Loans				MSME loans
	Housing	Vehicle	Education	Other personal loans	
Public sector banks	3.20	3.56	4.40	5.04	4.83
Private sector banks	3.19	3.89	6.07	4.31	3.97
Domestic banks	3.19	3.60	4.75	4.98	4.47

Source: RBI.



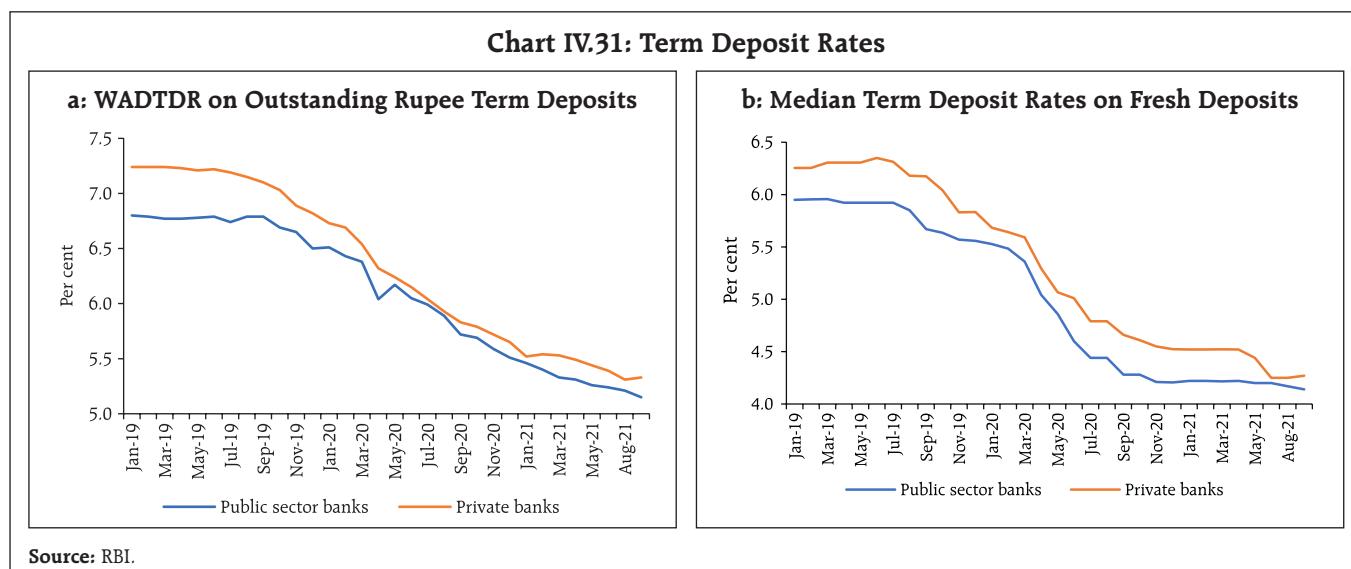
2017 to May 2020, declined to 3 per cent in June 2020 and has remained at the same level since then.

Amongst domestic banks, PvBs have exhibited higher pass-through to term deposit rates compared to PSBs, resulting in some convergence in the levels of their deposit rates (Chart IV.31).

Interest rates on small saving schemes are administered by the Government of India and are fixed on a quarterly basis at a spread of 0-100 bps over and above G-sec yields of comparable maturities.

The Government has left the interest rates on various small savings instruments unchanged since Q2:2020-21. The currently prevailing rates are 47-178 bps higher than the formula-based rates for Q3:2021-22 (Table IV.5).

With the moderation in interest rates on bank deposits and unchanged interest rates on small savings, the latter have become attractive to depositors. The growth in accretions under small savings has consistently been above that of bank deposits since



**Table IV.5: Interest Rates on Small Savings Instruments – Q3:2021-22**

Small Savings Scheme	Maturity (years)	Spread (Percentage point) \$	Average G-sec Yield (%) of Corresponding Maturity (June 2021 - August 2021)	Formula based Rate of Interest (%) (applicable for Q3:2021-22)	Government Announced Rate of Interest (%) in Q3:2021-22	Difference (basis points)
(1)	(2)	(3)	(4)	(5) = (3) + (4)	(6)	(7) = (6) - (5)
Savings Deposit	-	-	-	-	4.00	-
Public Provident Fund	15	0.25	6.38	6.63	7.10	47
Term Deposits						
1 Year	1	0	3.72	3.72	5.50	178
2 Year	2	0	4.23	4.23	5.50	127
3 Year	3	0	4.74	4.74	5.50	76
5 Year	5	0.25	5.76	6.01	6.70	69
Recurring Deposit Account	5	0	4.74	4.74	5.80	106
Monthly Income Scheme	5	0.25	5.73	5.98	6.60	62
Kisan Vikas Patra	124 Months#	0	6.38	6.38	6.90	52
NSC VIII issue	5	0.25	5.89	6.14	6.80	66
Senior Citizens Saving Scheme	5	1.00	5.76	6.76	7.40	64
Sukanya Samridhi Account Scheme	21	0.75	6.38	7.13	7.60	47

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

#: Current maturity is 124 months.

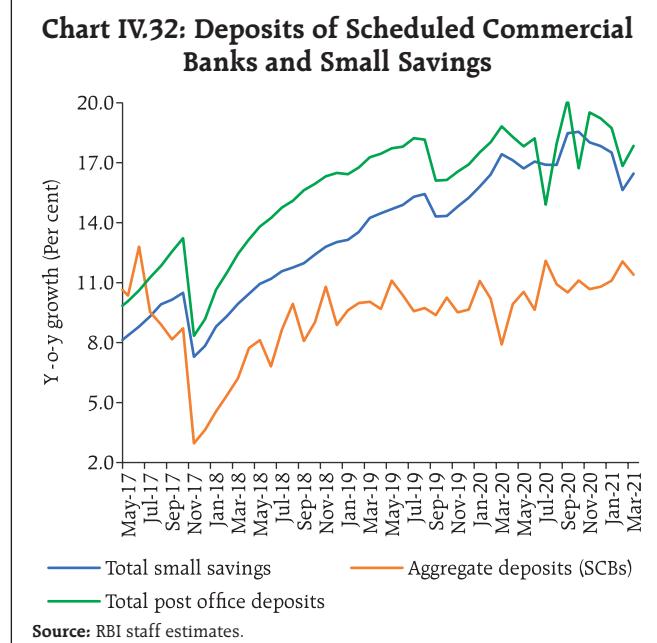
**Note:** Compounding frequency varies across instruments.

**Sources:** Government of India; FBIL; and RBI staff estimates.

2018 and the gap has widened, with implications for monetary transmission as and when credit demand picks up (Chart IV.32).

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

The RBI Act, 1934 requires the Reserve Bank 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. In consonance with the MPC's accommodative stance, the Reserve Bank continued with liquidity easing measures during H1:2021-22, aimed at nurturing and supporting the nascent growth impulses. The RBI announced a secondary market G-sec acquisition programme or G-SAP 1.0 in April 2021, with a commitment to a specific amount of open market purchases of government securities. The G-SAP is unconventional on several counts. First, the RBI commits upfront the amount to be purchased in contrast to regular OMO purchases which are discretionary. Second, it entails continued support to the market in view of the large government borrowing programme. Third, the size



of the purchases is significantly larger than OMOs in normal times, thus boosting demand for G-secs amidst elevated supply during 2021-22.

During Q1, the RBI conducted three auctions under G-SAP 1.0 and purchased G-secs (including SDLs) of ₹1.0 lakh crore, in line with the announced amount. In Q2, six auctions were conducted under G-SAP 2.0 aggregating ₹1.2 lakh crore. The G-SAP 2.0 auctions conducted on September 23 and September 30, 2021 for ₹15,000 crore each were accompanied by simultaneous sales of G-secs of identical amount. Overall, net liquidity injected through OMO purchases, including G-SAP, amounted to ₹2.4 lakh crore in H1. Under the G-SAP, the RBI purchased both on the run (liquid) and off the run (illiquid) securities across the maturity spectrum, with more than 68 per cent of the purchases concentrated in over 5 to 10-year maturity segment, thus imparting liquidity to securities across the term structure (Table IV.6). By containing volatility in G-sec yields – the benchmarks for the pricing of other financial market instruments – G-SAP helped to keep interest rates benign, thereby facilitating monetary transmission.

**Table IV.6: G-SAP- Maturity Profile**

Residual Maturity (Years)	Type of security	G-SAP 1.0		G-SAP 2.0	
		Face value of G-sec purchased (₹ crore)	Share in total purchases (per cent)	Face value of G-sec purchased (₹ crore)	Share in total purchases (per cent)
Up to 5	On the run	-	-	6,885	5.7
	Off the run	17,541	18.5	7,019	5.8
	<b>Total</b>	<b>17,541</b>	<b>18.5</b>	<b>13,904</b>	<b>11.6</b>
Over 5 to 10	On the run	42,635	45.1	4,377	3.6
	Off the run	20,774	22.0	79,763	66.5
	<b>Total</b>	<b>63,409</b>	<b>67.0</b>	<b>84,140</b>	<b>70.1</b>
Over 10 to 14	On the run	5,882	6.2	15,973	13.3
	Off the run	7,743	8.2	5,984	5.0
	<b>Total</b>	<b>13,625</b>	<b>14.4</b>	<b>21,957</b>	<b>18.3</b>
<b>Grand Total</b>		<b>94,575*</b>	<b>100.0</b>	<b>1,20,001</b>	<b>100.0</b>

\*: Total purchases made under G-SAP 1.0 amounted to ₹1.0 lakh crore, which includes G-sec of ₹0.95 lakh crore and SDLs of ₹0.05 lakh crore.

Source: RBI

### Drivers and Management of Liquidity

During Q1:2021-22, currency expansion, build-up of GoI cash balances and the restoration of the cash reserve ratio (CRR) to its pre-pandemic level were the main sources of liquidity leakage while its accretion was through G-SAP and forex purchases (Table IV.7). Surplus liquidity – as reflected in average daily net absorptions under the LAF – amounted to ₹5.1 lakh crore.

**Table IV.7: Liquidity – Key Drivers and Management (₹ crore)**

	2020-21	Q1: 2021-22*	Q2: 2021-22*	H1: 2021-22*
<b>Drivers</b>				
(i) CiC	-4,06,452	-1,26,266	55,005	-71,261
(ii) Net forex purchases	5,10,516	1,60,843	1,42,395	3,03,238
(iii) GoI cash balances	1,18,999	-2,23,740	-5,600	-2,29,340
<b>Management</b>				
(i) Net OMO purchases	3,13,295	1,38,965	97,960	2,36,925
(ii) CRR balances	-1,46,617	29,392	-16,470	12,922
(iii) Net LAF operations	-152,302	-60,759	-2,86,162	-3,46,921
<i>Memo:</i>				
1. Average daily injection (LTRO, TLTRO, On tap TLTRO, SLTRO and MSF)	1,58,491	82,948	84,488	83,722
2. Average daily total absorption (i+ii)	6,54,645	5,93,181	8,10,096	7,02,231
(i) Fixed rate reverse repo	6,13,700	4,10,747	5,23,626	4,67,495
(ii) Variable rate reverse repo (VRRR)	40,945	1,82,434	2,86,470	2,34,736
3. Average daily net absorption during the period (2-1)	4,96,154	5,10,233	7,25,609	6,18,509
4. Outstanding total injection at the end of the period	82,963	83,307	85,509	85,509
5. Outstanding total absorption at the end of the period	4,93,904	6,85,828	9,14,463	9,14,463
6. Outstanding net absorption at the end of the period	4,11,211	6,02,521	8,28,954	8,28,954

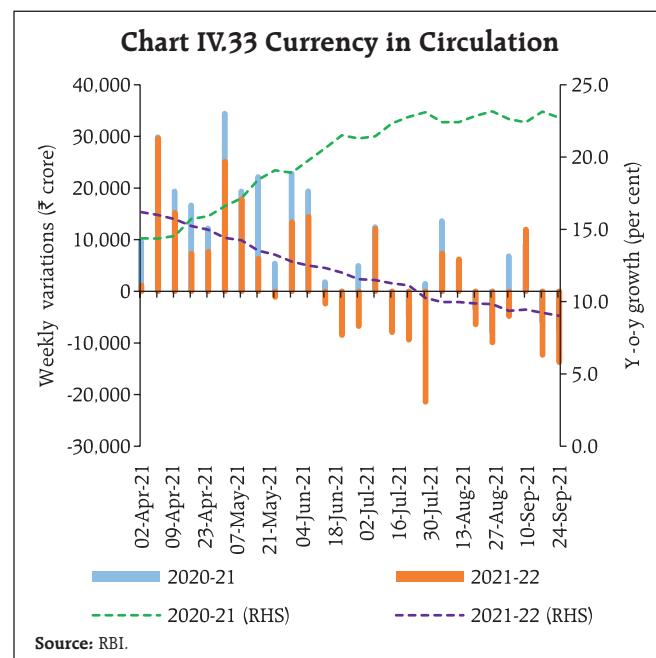
\*: Data on drivers and management are based on the last Friday of the respective periods.

Note: Inflow (+)/outflow (-) from the banking system.

Source: RBI

Lower liquidity leakage due to subdued currency expansion added to the persistence of large surplus liquidity in H1:2021-22 (Chart IV.33). Despite the second wave of the pandemic being more virulent, the precautionary demand for cash remained muted. In Q2, the usual return of currency during the monsoon season, renewed vigour of capital inflows along with liquidity injections through G-SAP 2.0 augmented surplus liquidity. As a result, average daily net liquidity absorptions in Q2 soared to ₹7.3 lakh crore.

Unabated capital inflows reflected on the forward premium curve in the forex market – its shape being determined by the interplay of institutional features and regulatory aspects with the market microstructure and flow factors, apart from macroeconomic fundamentals (Box IV.2).



#### Box IV.2: Determinants of Forward Premium – A Macro-Finance Approach

According to the covered interest rate parity (CIP) condition, the forward premium reflects the interest rate differential between two currencies of comparable maturity and risk profile. Capital controls and varying risk perceptions of investors can, however, lead to a wedge in this relationship. Qualitative attributes (such as market sentiments, expectations, political stability and financial news) and quantitative factors (like crude oil prices, central bank's forex intervention and foreign exchange market turnover) also impact forward premia (Srikanth and Chittedi, 2014). While interest rate differentials explain the forward premia in the long-run in line with CIP, the volatility in the spot rate influences it in the short-run (Biswas *et al.*, 2018). Drawing upon the macro-finance literature on modelling the shape of the yield curve through principal component analysis (Diebold *et al.*, 2006), the forward premium curve can

be decomposed into its latent factors – level, slope and curvature. An analysis based on monthly data (January 2015 to June 2021) for tenors spanning 1-12 months indicates that the first three principal components (PCs) explain more than 99 per cent of the variation in the data. The three PCs characterise the level, the slope and the curvature, respectively, of the forward premium curve.<sup>10</sup>

The determinants of forward premia for three tenors viz., 1-month, 3-months and 12-months are separately short-listed using a machine learning approach (random forest<sup>11</sup> methodology) (Dilip *et al.*, 2021). These variables are: (i) the differential between yields on 3-month T-bills for US and India (Int\_Diff); (ii) domestic system liquidity as proportion to GDP (Net\_LAF); (iii) global economic policy uncertainty index (GEPUI); (iv) RBI's forward

(Contd.)

<sup>10</sup> The level is the weighted sum of changes in forward premia rates with the same sign across all maturities; a level shock changes the rates by identical amounts across all maturities, indicating a parallel shift of the forward premium curve. The slope weighs changes in rates for short maturities with a negative sign and those of medium and long maturities with a positive sign. Finally, the curvature associates positive signs with short and long-term changes but negative signs with medium-term rate changes; a disproportionate shock to the medium-term rates *vis-a-vis* the short and long term rates impacts the hump of the curve (Litterman and Scheinkman, 1991).

<sup>11</sup> A random forest is a supervised machine learning algorithm that assesses the relative importance of each variable on the prediction.

intervention (net forward purchases) as proportion of forex reserves (Forward\_Intervention); (v) CPI inflation volatility (Vol\_Inf); (vi) 3-month realised volatility of NIFTY 50 (Vol\_NIFTY50); and (vii) trade deficit as proportion to GDP [Trade\_Deficit]. The generalized method of moments (GMM) approach – more specifically, the continuously updating GMM estimation (CUE) methodology using appropriate instrument variables<sup>12</sup> – is deployed to address endogeneity concerns, after conducting due diligence for the time series properties of the variables.

The empirical results suggest positive and statistically significant impact of interest rate differentials and global uncertainty on the level of the forward premium curve

**Table IV.2.1: Determinants of the Forward Premium Curve**

Explanatory Variables/Dependent Variable	ΔLevel	Slope	Curvature
Lag of Dependent Variable	-0.40*(-1.97)	0.38***(4.57)	0.23***(3.16)
ΔInt_Diff	0.64***(3.65)	0.20**(2.66)	-
ΔNet_LAF	-0.56***(-3.90)	-0.15*(-1.73)	-0.04***(-3.04)
ΔGEPU(-1)	0.003**(2.15)	-	-
ΔForward Intervention	0.16*(1.77)	-0.09**(-2.80)	-0.03*(-1.69)
Vol_NIFTY50	0.02***(3.81)	0.01**(2.85)	-
Vol_Inf	-	-	-0.05*(-1.99)
Trade_Deficit(-1)	-	-	0.03**(2.37)
Constant	-0.32***(-2.90)	-0.23***(-4.23)	0.15***(3.38)
Adj R-squared	0.21	0.32	0.30
<b>Diagnostics</b>			
J-Statistic (p-value) (Over-identification test)	0.55	0.95	0.44
Q-statistic (p-value) (Serial correlation test for 4 lags)	0.36	0.12	0.28

**Note:** \*\*\*, \*\*, and \* indicate 1 per cent, 5 per cent and 10 per cent levels of significance, respectively.

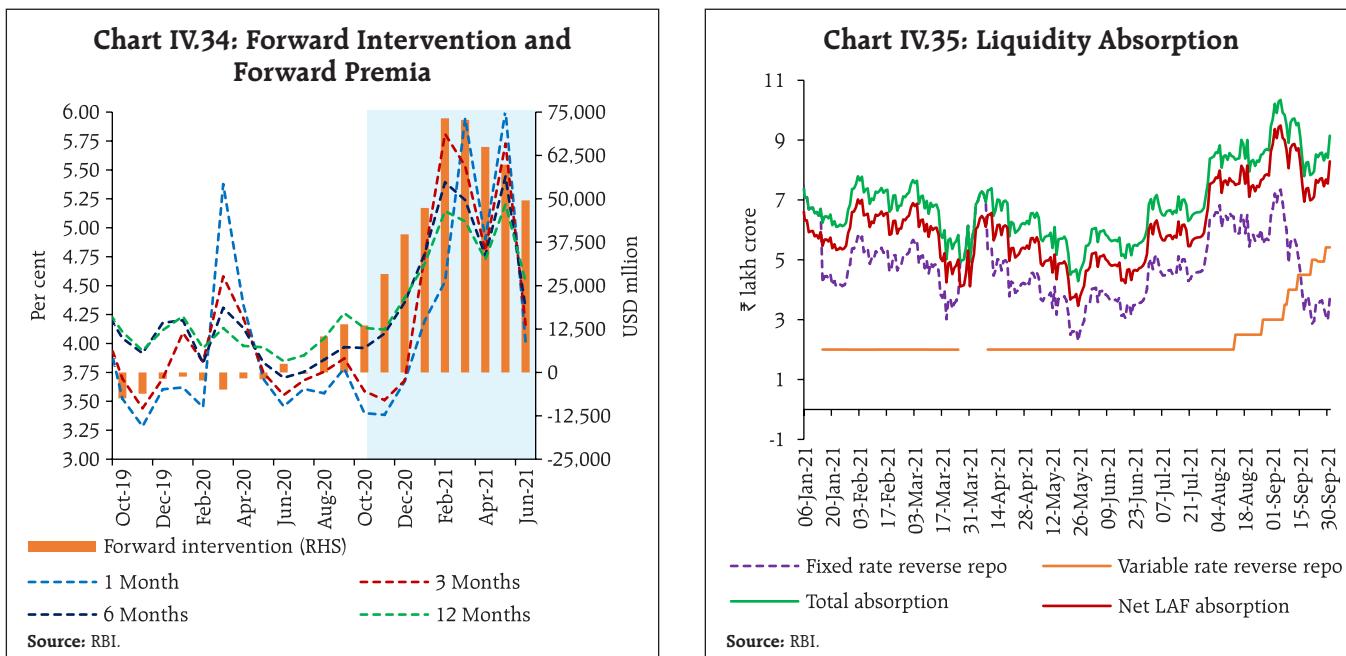
Figures in parenthesis are t-statistics based on heteroscedasticity and autocorrelation consistent (HAC) corrected standard errors.

(Table IV.2.1). Stock market turbulence (captured by NIFTY volatility) is associated with a marginal hardening of the level of the forward premia along with a steepening of the curve as traders seek to hedge their positions. The rise in the volatility in domestic inflation seems to increase risk aversion among market participants at shorter and longer tenors, thus moderating the extent of the hump in the forward premia curve. The increased availability of domestic liquidity moderates the level and shape of the forward premia curve. Finally, forward interventions by the RBI seems to flatten the slope and reduce the curvature while increasing the level of the premia. The analysis suggests that forward interventions generally discourage carry trade activities by reducing the steepness of the forward premia curve. In a situation of large surplus liquidity, a steeper curve can trigger a vicious cycle of higher inflows and even further increase in the forward premia.

## References

- Biwas, D., S. Kumar, S., and A. Prakash (2018), "Do Spot Rate Volatility and Forward Market Intervention by the Central Bank Impact the Forward Premia in India?", *Asian Journal of Economics, Finance and Management*, 1(1), pp 1-12.
- Diebold, F., G. Rudebusch, G., and S. B. Aruoba (2006), "The Macroeconomy and the Yield Curve: A Dynamic Latent Factor Approach", *Journal of Econometrics*, 131(1-2), pp 309-338.
- Dilip, A., P. Kumar, P. Sachdeva, K.M. Kushawaha and I. Bhattacharyya (2021), "Recent Movements in Forward Premia – An Analytical Perspective", RBI *mimeo*.
- Litterman R. B., and J. Scheinkman, (1991) "Common Factors Affecting Bond Returns", *The Journal of Fixed Income*, Summer, 1(1) 54-61.
- Srikanth, M. and K. R. Chittedi (2014), "Perspectives on Forward Premia in India Forex Market: A Study of USD/INR", *Journal of Stock & Forex Trading*, 3(4).

<sup>12</sup> Apart from lagged variables as instruments, implied volatility of INR per USD rates for 3-months is used as an instrument variable for forward intervention; the residuals from regressing stock market volatility on policy uncertainty are used as an instrument for the stock market variable.



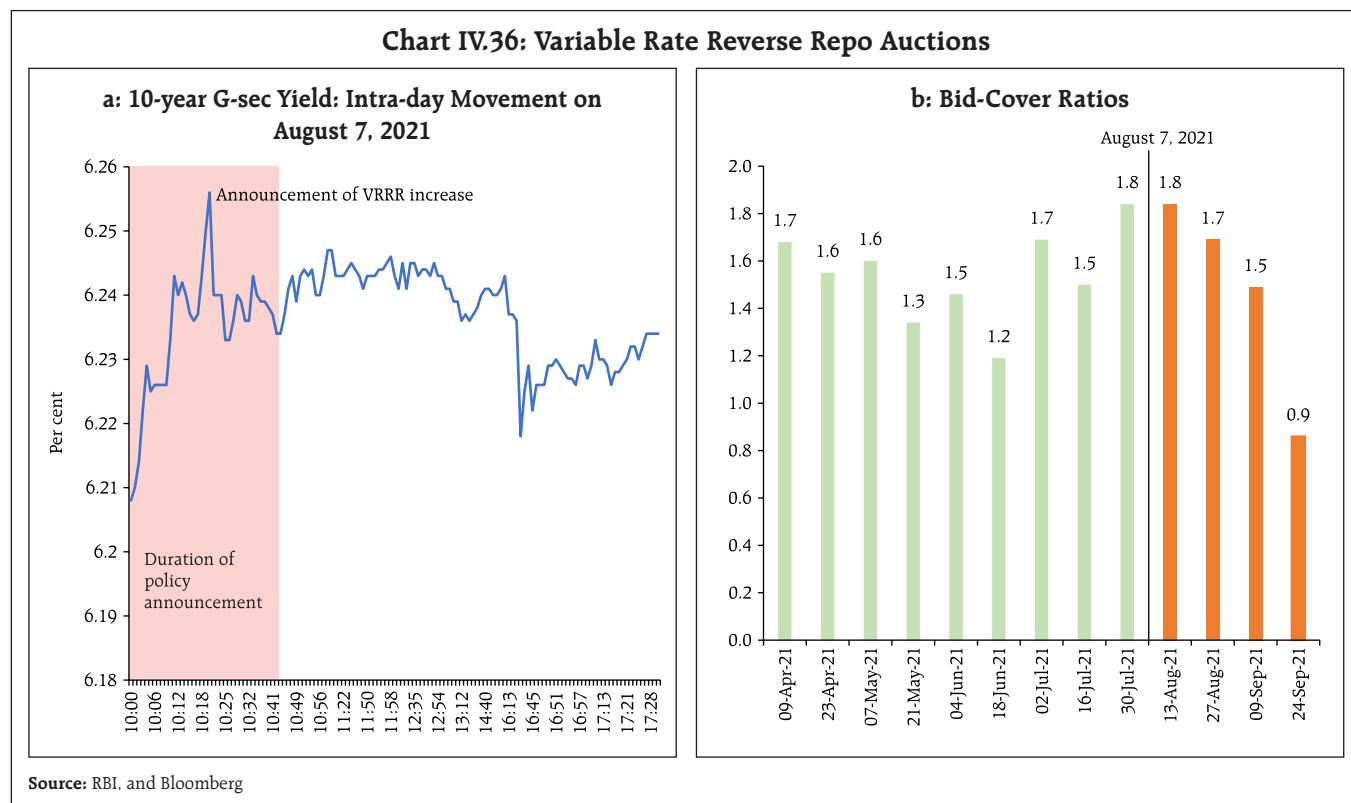
With the moderation of the forward book in H1:2021-22 (up to July), the pressure on the forward premia somewhat eased (Chart IV.34).

The gradual normalisation of liquidity management operations in sync with the revised liquidity management framework instituted in February 2020 was a key feature of liquidity management during H1:2021-22. As a part of this process, the CRR was restored to its pre-pandemic level of 4.0 per cent of NDTL in two phases of 0.5 percentage point increase in the fortnights beginning March 27, 2021 and May 22, 2021. The surplus liquidity was mopped up through the overnight fixed rate reverse repo and the VRRR auctions of varying maturities under the LAF. Keeping in view the markets' feedback and appetite for higher remuneration, the Reserve Bank enhanced the size of the fortnightly VRRR auctions in a phased manner from ₹2.0 lakh crore during April-July to ₹2.5 lakh crore on August 13, 2021; ₹3.0 lakh crore on August 27, 2021; ₹3.5 lakh crore on September 9, 2021; and ₹4.0 lakh crore on September 24, 2021. These

were supported by fine-tuning operations conducted through VRRRs of 3, 4 and 7 days maturities. Notwithstanding the phased increase in the size of VRRRs, the surplus liquidity absorbed through fixed rate reverse repo remained around ₹4.7 lakh crore (on an average) in H1 (Chart IV.35).

The enhancement in VRRR size was initially interpreted as a precursor to reversal of liquidity measures leading to a transient spike in G-sec yield on the policy day, i.e., August 7, 2021 (Chart IV.36a). Such fears, however, were unfounded as evident from the relative stability in the bid-cover ratios of 14-day VRRR auctions in the immediate fortnights after the policy announcement *vis-à-vis* before (Chart IV.36b).

Reflecting the liquidity injections through G-SAP and capital inflows, reserve money (RM) increased by 14.7 per cent (y-o-y) as on September 24, 2021 (9.1 per cent adjusted for the first-round impact of the change in the CRR) while money supply (M3) increased by 9.3 per cent (y-o-y) as on September 24 (Table IV.8).



**Table IV.8: Key Banking and Monetary Aggregates in H1:2021-22**

Indicator	Variation (in ₹ Crore)			
	Financial Year		Y-o-Y	
	2020-21	2021-22	2020-21	2021-22
Reserve money	1,59,682 (5.3)	59,318 (1.6)	4,01,195 (14.4) [18.6]*	4,69,910 (14.7) [9.1]*
Currency in circulation	2,35,646 (9.6)	71,261 (2.5)	4,96,810 (22.7)	2,42,067 (9.0)
Broad money (M3)	9,39,801 (5.6)	5,47,546 (2.9)	19,25,597 (12.2)	16,52,360 (9.3)
Aggregate deposits	6,94,911 (5.1)	4,81,525 (3.2)	13,55,943 (10.5)	13,32,634 (9.3)
Demand deposits	-40,943 (-2.5)	-38,221 (-2.1)	1,67,175 (11.9)	2,46,911 (15.7)
Time deposits	7,35,854 (6.2)	5,19,746 (3.9)	11,88,768 (10.3)	10,85,722 (8.6)
Bank credit	-99,280 (-1.0)	7,283 (0.1)	5,04,727 (5.2)	6,85,211 (6.7)

\*: Growth rates adjusted for the first-round impact of the change in CRR.  
**Note:** 1. Figures in parentheses indicate percentage change.

2. Data on deposits and bank credit pertains to scheduled commercial banks (SCBs).

#### Other Liquidity Measures

Apart from G-SAP, the RBI continued with measures to meet targeted sectoral credit needs to nurture the nascent economic recovery in H1. These measures included (i) special refinance facilities of ₹66,000 crore to all-India financial institutions (AIFIs) comprising ₹25,000 crore to the National Bank for Agriculture and Rural Development (NABARD); ₹10,000 crore to the National Housing Bank (NHB); and ₹31,000 crore to the Small Industries Development Bank of India (SIDBI) to support and nurture the recovery; (ii) term liquidity facility of ₹50,000 crore to ramp up COVID-related healthcare infrastructure and services in the country; (iii) special long-term repo operations (SLTRO) for small finance banks (SFBs) of ₹10,000 crore to be deployed for fresh lending of up to ₹10 lakh per borrower; (iv) on-tap liquidity window of ₹15,000 crore in order to mitigate the adverse impact

**Table IV.9: Liquidity Measures since February 6, 2020**  
(As on September 30, 2021)

Measure	Announced Amount (₹ crore)			
	2019-20	2020-21	2021-22	Overall
	(1)	(2)	(3)	(4) = 1+2+3
LTRO	2,00,000			2,00,000
Variable rate repo	1,75,000	50,000		2,25,000
SLF for PDs		7,200		7,200
CRR cut	1,37,000			1,37,000
MSF (dip by additional 1% in SLR)	1,37,000			1,37,000
TLTRO	25,000	75,000		1,00,000
TLTRO (2.0)		50,000		50,000
Net OMO purchases including G-SAP	40,000	1,10,000	2,20,000	3,70,000
Special liquidity facility for mutual funds		50,000		50,000
Refinance to NABARD, SIDBI, NHB and EXIM Bank		75,000	66,000	1,41,000
Special liquidity scheme for NBFCs		30,000		30,000
56-day term repo		1,00,000		1,00,000
On Tap TLTRO		1,00,000		1,00,000
SLTRO for small finance banks			10,000	10,000
Term liquidity facility to ease access to emergency health services			50,000	50,000
On-tap liquidity window for contact-intensive sectors			15,000	15,000
<b>Total</b>	<b>7,21,200</b>	<b>6,40,000</b>	<b>3,61,000</b>	<b>17,22,200</b>
<b>As per cent of nominal GDP for 2020-21</b>				<b>8.7</b>

Source: RBI

of the second wave of the pandemic on certain contact-intensive sectors<sup>13</sup>. Overall, the Reserve Bank has announced liquidity enhancing measures worth ₹17.2 lakh crore (8.7 per cent of nominal GDP of 2020-21) since February 6, 2020 (Table IV.9).

#### IV.4 Conclusion

Domestic financial markets broadly remained stable and in sync with the accommodative policy stance of the MPC and the Reserve Bank's continued calibrated liquidity injection measures. Market activity was vibrant, with short-term rates easing appreciably along with thinning of spreads. The renewed vigour of capital inflows and the infusion of discretionary liquidity through G-SAP resulted in a substantial increase in surplus systemic liquidity, which was modulated through increases in VRRR amounts and fine-tuning operations. Monetary transmission improved further amidst nascent signs of an upturn in credit growth. Going forward, liquidity conditions are expected to continue to be accommodative in consonance with the monetary policy stance, through calibrated liquidity management operations. Imparting momentum to the nascent economic recovery process and putting it on a sustained and durable basis through efficient policy transmission would continue to assume primacy in the hierarchy of policy objectives.

<sup>13</sup> As an incentive, banks were permitted to park their surplus liquidity up to the size of the loan book created under this scheme with the Reserve Bank under the reverse repo window at a rate which is 25 bps lower than the repo rate i.e., 40 bps higher than the reverse repo rate.

## V. External Environment

*The global economic activity gained traction in Q2:2021 (April-June). In Q3, however, the momentum of the global recovery seems to have weakened across the board as the rapid spread of more virulent strains of the virus weighed on business conditions. Elevated commodity prices and overstretched supply chains are keeping input price pressures high, posing upside risks to headline inflation. The divergence in monetary policy actions and stances is amplifying the unequal and uneven nature of the global recovery and increasing the downside risks to the outlook, while global financial markets are turning volatile.*

In the aftermath of the April 2021 MPR, daily new infections appeared to have peaked in major advanced economies (AEs) and a few emerging market economies (EMEs), allowing easing of restrictions and global economic activity to gain traction in Q2:2021 at a diverging and unequal pace on the basis of scale and speed of vaccination. Starting June, however, the momentum of the global recovery seems to have weakened across the board as the rapid spread of more virulent strains of the virus weighed on business conditions in most major economies, pulling down global purchasing managers' index (PMI) readings and is likely to reflect in lower GDP growth in Q3. Besides, still rising commodity prices and overstretched supply chains are keeping input price pressures high, posing upside risks to headline inflation. Several EME central banks and a few in the AEs have responded with policy rate hikes and unwinding of policy stimulus. The divergence in monetary policy actions and stances is amplifying the unequal and uneven nature of the global recovery and increasing the downside risks to the outlook.

Global financial markets remained buoyant up to early-September before increasingly turning volatile. Even as stock markets in a few countries scaled fresh peaks in September 2021, most saw sharp correction.

In the bond markets, yields remained range-bound up to August in most AEs but rose sharply in September. In EMEs, bond yields moved bi-directionally but rose in the latter part of September, in sync with the AEs. The US dollar has strengthened in anticipation of taper and higher inflation outcomes in the US.

### V.1 Global Economic Conditions

Economic activity accelerated in major AEs and EMEs in Q2:2021, but faltered in Q3, with most economies yet to return to their pre-pandemic levels. In the US, the economic rebound that commenced in H2:2020 continued into H1:2021, with GDP bouncing back to its pre-pandemic level in Q2:2021 (Table V.1). Sustained policy support, easing of restrictions and vaccination supported a strong pick-up in consumer spending. Non-farm payroll showed signs of steady improvement during May-July indicating the mending of labour market conditions; however, it softened in August to a seven-month low amidst rising infections. Employment remains below the pre-pandemic level and the Federal Reserve (Fed)'s goal of maximum employment, beset with hiring difficulties and labour supply shortages. Incoming data for Q3 also suggest that the momentum of growth may have moderated – consumer sentiment plummeted in August to its lowest level in nearly a decade due to surging delta variant infections and inflation concerns, before rising marginally in September. The manufacturing PMI eased in July due to persistent supply side frictions but improved in the next two months even as the rising infections caseload weighed on the outlook.

After slipping into a double dip recession in Q1:2021, the Euro area rebounded sharply in Q2, growing at 9.2 per cent [q-o-q, seasonally adjusted annualised rate (SAAR)], as most major constituent economies returned to growth following gradual withdrawal of restrictions. Significant progress on vaccination, together with falling rates of incidence,

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

Country	Q2-2020	Q3-2020	Q4-2020	Q1-2021	Q2-2021	2020	2021 (P)	2022 (P)
<b>Quarter-over-quarter, seasonally adjusted, annualised rate (Q-o-q, SAAR)</b>								
Canada	-38.0	41.7	9.3	5.5	-1.1	-	-	-
Euro area	-39.1	60.9	-1.7	-1.1	9.2	-	-	-
Japan	-28.1	23.2	11.9	-4.2	1.9	-	-	-
UK	-58.1	90.2	4.5	-5.3	23.9	-	-	-
US	-31.2	33.8	4.5	6.3	6.7	-	-	-
<b>Year-on-year (Y-o-y)</b>								
<i>Advanced Economies</i>								
Canada	-12.6	-5.1	-3.1	0.3	12.7	-5.3	6.3	4.5
Euro area	-14.5	-4.0	-4.4	-1.2	14.3	-6.5	4.6	4.3
Japan	-10.1	-5.5	-0.9	-1.3	7.6	-4.7	2.8	3.0
UK	-21.4	-8.1	-7.1	-5.8	23.6	-9.8	7.0	4.8
US	-9.1	-2.9	-2.3	0.5	12.2	-3.5	7.0	4.9
<i>Emerging Market Economies</i>								
Brazil	-10.9	-3.9	-1.1	1.0	12.4	-4.1	5.3	1.9
China	3.2	4.9	6.5	18.3	7.9	2.3	8.1	5.7
India	-24.4	-7.4	0.5	1.6	20.1	-7.3	9.5	8.5
Indonesia	-5.3	-3.5	-2.2	-0.7	7.1	-2.1	3.9	5.9
Philippines	-17.0	-11.6	-8.3	-3.9	11.8	-9.6	5.4	7.0
Russia	-7.8	-3.5	-1.8	-0.7	10.5	-3.0	4.4	3.1
South Africa	-16.8	-5.8	-3.5	-2.6	19.3	-7.0	4.0	2.2
Thailand	-12.1	-6.4	-4.2	-2.6	7.5	-6.1	2.1	6.1
<b>Memo:</b>	<b>2020</b>		<b>2021 (P)</b>			<b>2022 (P)</b>		
World Output	-3.2		6.0			4.9		
World Trade Volume	-8.3		9.7			7.0		

P: Projection.

Note: India's data correspond to fiscal year (April-March).

Sources: Official statistical agencies; Bloomberg; IMF WEO Update, July 2021; and RBI staff estimates.

boosted consumer and business sentiments, and brightened the prospects for domestic demand and employment. In Q3, however, the economy seems to have lost some steam, as evident from high frequency indicators. The composite PMI, though in strong expansion, moderated in August and September from its 15-year high in July, as capacity constraints dragged on the manufacturing PMI, while services PMI fell to a four-month low in September.

The Japanese economy picked up in Q2 at a pace higher than expected, but much weaker than

other major AE peers. Resilient external demand underpinned a recovery in exports and capital expenditure. In Q3, however, the country is less likely to maintain this momentum as the upsurge in cases of more virulent strains pushed the economy into its fourth state of emergency in early July which was extended till September. The fallout from the renewed wave is already getting reflected in incoming data as industrial growth turned weaker in July and August and the manufacturing PMI, though in expansion zone, moderated in Q3. The composite PMI remained in contraction zone up to September, reflecting a sharp deterioration in business activity in the services sector.

In the UK, GDP grew sharply in Q2:2021 – as against a contraction in Q1 – as the gradual rollback of COVID-related restrictions together with rapid vaccine rollouts aided a strong rebound in household consumption and public spending. With increasing caseload intensifying the risk of another round of lockdown restrictions, the pace of recovery slowed in Q3. The composite PMI eased for the fourth consecutive month in September as output growth in both manufacturing and services weakened amidst stringent supply constraints.

The Chinese economy expanded by 7.9 per cent (y-o-y) in Q2. Successful containment of several sporadic virus outbreaks together with sustained policy measures kept exports and manufacturing activity well supported, thus powering a steady recovery. Domestic consumption, however, remains a weak spot and the economy exhibited signs of slowing down in Q3. Both manufacturing and services PMI slipped back into contraction in August for the first time since April 2020 following the deterioration in business conditions. In September, manufacturing PMI had the neutral reading of 50, i.e., neither expansion nor contraction. The deterioration in real

estate, rising input costs, regulatory crackdown on corporates in recent months and growing power outages are the major headwinds.

An examination of key macroeconomic indicators of BRICS economies reveals that the macroeconomic performance of India is likely to remain resilient in 2021 when compared with most other counterparts (Table V.2).

The Brazilian economy contracted marginally on q-o-q basis in Q2:2021, reversing three successive quarters of sequential expansion since Q3:2020. Contraction in both industry and agricultural sectors on account of the resurgence of COVID-19 infections, weighed on economic activity. On the demand side, a sharp decline in gross fixed capital investment, together with muted household consumption, led to the downturn. In Q3, indicators are pointing to mobility gains, with paced up vaccination having

boosted sentiments. Manufacturing PMI moderated in August but picked up in September, with production rising for the fifth successive month owing to a robust expansion in sales.

The Russian economy remained resilient with GDP having reached its pre-pandemic level in Q2:2021. A sustained recovery in consumer spending and investment demand supported the uptrend, while elevated commodity prices and the gradual recovery of oil output lent further support. Some slowing of momentum is evident in Q3 as a third wave of infections since end-June impacted both domestic and foreign demand conditions leading to a decline in production and slowdown in new order growth. The manufacturing PMI is back into the contraction zone since June, while the composite PMI recorded its first contraction since December 2020 in August but was back in expansion zone in September.

**Table V.2: Select Macroeconomic Indicators for BRICS**

Real GDP growth rate (per cent)	Country	2020	2021(P)	2022(P)	General Govt. gross debt (as per cent of GDP)	Country	2020	2021(P)	2022(P)
	Brazil	-4.1	5.3	1.9		Brazil#	98.9	91.8	98.8
	Russia	-3.0	4.4	3.1		Russia	19.3	18.0	17.7
	India	-7.3	9.5	8.5		India	89.4	90.1	86.3
	China	2.3	8.1	5.7		China	66.3	70.3	73.7
	South Africa	-7.0	4.0	2.2		South Africa	77.1	77.5	84.4
CPI inflation rate (per cent)	Country	2020	2021(P)	2022(P)	Current account balance (as per cent of GDP)	Country	2020 (P)	2021(P)	2022(P)
	Brazil	3.2	4.6	4.0		Brazil	-0.9	-0.6	-0.8
	Russia	3.4	4.5	3.4		Russia	2.2	3.9	3.3
	India	6.1 @	4.9	4.1		India	1.0	-1.2	-1.6
	China	2.4	1.2	1.9		China	2.0	1.6	1.3
	South Africa	3.3	4.3	4.5		South Africa	2.2	-0.4	-1.5
General Govt. net lending/borrowing (as per cent of GDP)	Country	2020 (P)	2021(P)	2022(P)	Forex reserves* (in US\$ billion)	Country	2020	2021	
	Brazil	-13.4	-8.3	-7.2		Brazil	355.6	370.4	
	Russia	-4.1	-0.8	-0.3		Russia	596.1	618.2	
	India	-12.3	-10.0	-9.1		India	588.4	633.6	
	China	-11.4	-9.6	-8.7		China	3536.0	3588.1	
	South Africa	-12.2	-10.6	-8.3		South Africa	54.2	58.3	

P: Projection.

\*: Forex reserves for 2021 pertain to August 2021.

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

@: Average of the period from June 2020 to March 2021.

**Note:** India's data correspond to fiscal year (April-March).

**Sources:** Bloomberg; Official statistical agencies; WEO April 2021 database and July 2021 Update; and IRFCL, IMF.

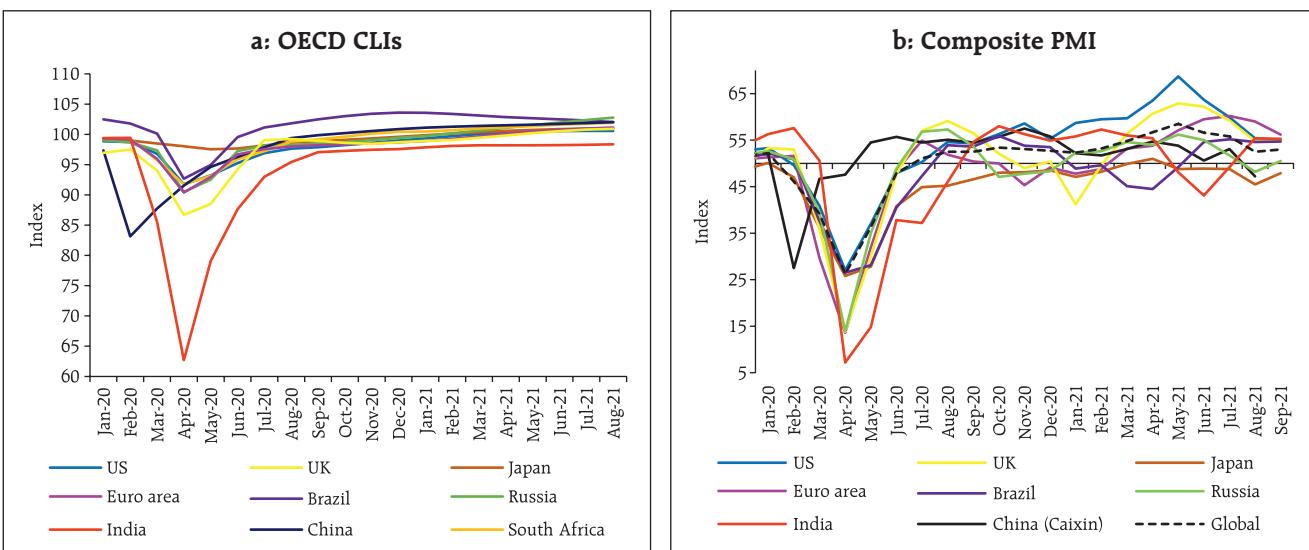
The South African economy has exhibited gradual recovery with four consecutive quarters of q-o-q expansion up to Q2:2021. The recovery was underpinned by strong growth in transport and communication, personal services and the agricultural sector, while household spending and exports lent support. In Q3, however, the pace of growth is likely to have decelerated as social unrest, mounting infections, slow vaccine rollouts and power outages weakened business conditions as also domestic demand.

Among the South-East Asian economies, recovery remains slow-paced with renewed waves of contagious strains of COVID-19 amidst lagged inoculation rates. Stringent containment measures have resulted in deterioration of business conditions, pushing manufacturing PMI for all major ASEAN economies into contraction territory in August, for the first time since May 2020. The PMI manufacturing for the ASEAN region was at the neutral level of 50 in September.

The OECD composite leading indicators (CLIs) available up to August 2021 suggest moderate improvement just above trend level across most major AEs, while for major EMEs it reflects diverging developments (Chart V.1a). The global composite PMI has moderated within the expansion zone, hitting a 7-month low in August, before rising marginally in September with PMI manufacturing remaining flat (Chart V.1b).

Global trade showed signs of revival during Q4:2020 and recovered swiftly during H1:2021 across AEs and EMEs (Chart V.2a). Following the recent resurgence in global trade, the WTO has revised its growth forecast of merchandise trade volume to 10.8 per cent for 2021. However, persisting worldwide shortages in semiconductors and port congestion may moderate global trade recovery in certain sectors (Box V.1). The Baltic Dry Index, which measures shipping costs for a wide variety of bulk commodities such as coal, iron ore and grain, rose to a new high by end-September (Chart V.2b).

**Chart V.1: High Frequency Indicators**



Sources: OECD; and Bloomberg.

### Box V.1: Global Semiconductor Shortage: Opportunities and Challenges

The world is currently facing an acute shortage of semiconductors, which is the fourth most traded item globally after crude oil, refined oil and cars (BCG-SIA Report, 2021). The global semiconductor market is valued at US\$440 billion accounting for around 5 per cent of global goods trade and is expected to grow by 25.1 per cent (US\$551 billion) in 2021, driven by key segments such as mobile phones, information and communications technology (ICT) infrastructure, personal computers, industrial applications, consumer electronics and automobiles (Chart V.1.1a). The buoyant demand for electronic gadgets, cloud computing solutions and auto industry following COVID-19 pandemic led to a huge supply-demand mismatch in the semiconductor industry, causing production delays and inflationary pressures across segments forcing companies to reinvent their supply chains. Alix Partners (2021) estimates that the ongoing semiconductor shortage may lead to revenue loss of around US\$210 billion in 2021 in the automotive sector. According to Gartner (2021), normalcy is expected to return to semiconductor industry by the second quarter of 2022.

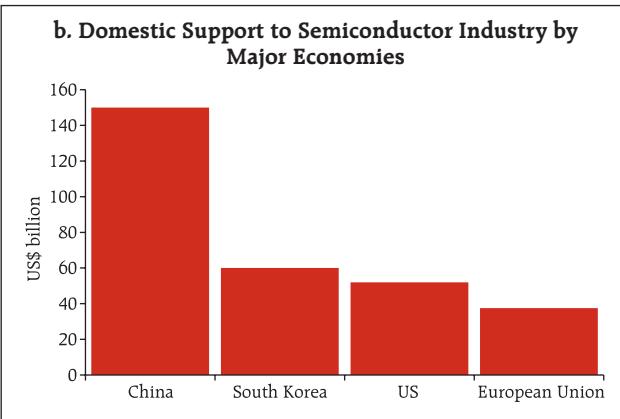
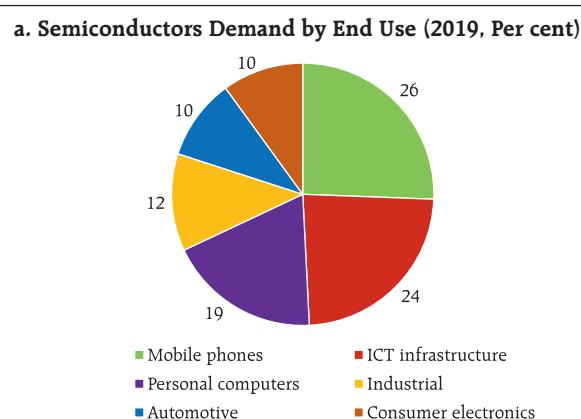
Realising critical geo-political concerns associated with semiconductor industry, countries are offering huge

incentives to scale up their domestic semiconductor manufacturing capacity (Chart V.1.1b). Furthermore, leading semiconductor manufacturers like TSMC and Intel have also planned huge capital expenditure to the tune of US\$100 billion and US\$43.5 billion, respectively, to tap the elevated demand. The recent investment boom to meet shortages may lead to overcapacity in the long run.

The semiconductor industry is at the core of India's digital transformation into a US\$1 trillion digital economy by 2025. The size of the world market for 11<sup>1</sup> frontier technologies is expected to increase to US\$3.2 trillion by 2025 (UNCTAD, 2021) and drive the demand for semiconductors in future. Moreover, the share of software-related automotive electronics in car industry is estimated to increase from 27 per cent in 2010 to 45 per cent by 2030 (Deloitte, 2019).

The semiconductor industry is highly capital-intensive with a long gestation period. Annual energy requirements to run large fabrication facilities are estimated at around 169 MWh, sufficient to power an Indian city (Kumar, 2021). Moreover, it requires on average 2-4 million gallons of ultra-pure water daily (Baskaran, 2017). Furthermore, wastage disposal associated with semiconductor industry is also

**Chart V.1.1: Snapshot of Global Semiconductor Industry**



\*: The incentives for South Korea and the European Union are estimated at US\$55-65 billion (over three years) and US\$20-35 billion (over ten years), respectively. The financial incentive for China is for ten years.

Sources: SIA-BCG Report and various SIA releases.

(Contd.)

<sup>1</sup> Artificial intelligence, internet of things, big data, blockchain, 5G, 3D printing, robotics, drone, gene editing, nanotechnology and solar photovoltaic.

capital intensive and raises environmental concerns. The semiconductor industry is also highly cyclical in nature and determined by two variables, namely semiconductor inventory and fabrication plant capacity (Liu W. H., 2005).

Using a Markov regime-switching model, the expected duration of an expansionary cycle (8 months) is obtained as twice that of a contractionary phase (4 months) (Liu and Chyi, 2006). We extend that line of analysis to the period September 2003 to June 2021 with the following empirical specification:

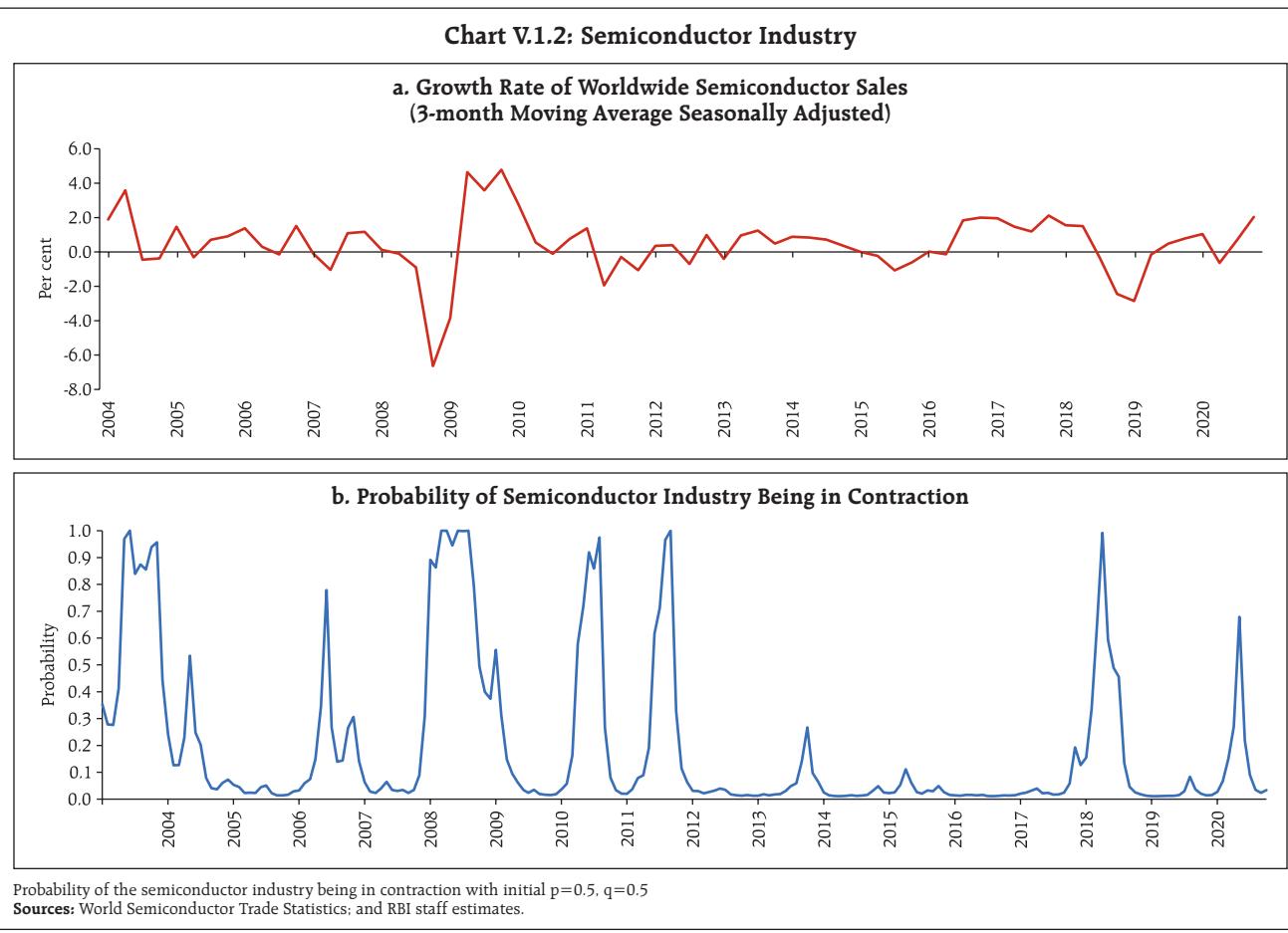
$$\begin{aligned} WMB_t - \mu_{St} = & \rho_1(WMB_{t-1} - \mu_{St-1}) + \rho_2(WMB_{t-2} - \mu_{St-2}) \\ & + \rho_3(WMB_{t-3} - \mu_{St-3}) \\ & + \rho_4(WMB_{t-4} - \mu_{St-4}) + \epsilon_t \dots \dots \dots \dots \dots \quad (1) \end{aligned}$$

$$\mu_{St} = \mu_0(1 - S_t) + \mu_1 S_t \quad \dots \dots \dots \dots \dots \dots \quad (3)$$

$$\Pr [S_t = 1 | S_{t-1} = 1] = p \quad \dots \dots \dots \dots \dots \dots \dots \quad (4)$$

where  $WMB_t$  is defined as the growth rate of worldwide semiconductor sales. The equations (1) - (5) represent the model set up as an AR (4) process where  $S_t = 1$  stands for expansion of the semiconductor industry and  $S_t = 2$  stands for contraction of the semiconductor industry. The transition probability from expansion to expansion (i.e., from  $S_{t-1} = 1$  to  $S_t = 1$ ) is defined as  $p$ . On the other hand, the transition probability from contraction to contraction ( $S_{t-1} = 2$  to  $S_t = 2$ ) is defined as  $q$ .

The empirical results suggest that the expected duration of expansion and contraction in the semiconductor industry is around 16 months and 4 months, respectively. The higher expansionary period reflects the increasing demand for semiconductors across industries post COVID-19 (Charts V.1.2a and V.1.2b).



(Contd.)

Given the renewed focus on digitalisation and increasing domestic demand for electronic goods with large import dependency, the government has initiated the Production Linked Incentive (PLI) scheme and Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS) to encourage its domestic production. Incentives in line with those provided by major countries would help develop semiconductor fabrication facilities in India. Fiscal incentives and provision of adequate infrastructure like uninterrupted supply of electricity and ultra-pure water could contribute to India's emergence as a major player in this industry and provide a conducive environment for the hardware segment to complement the software industry.

### Select References

- Kumar, M. J. (2021). Is India going to be a major hub of semiconductor chip manufacturing? *IETE Technical Reviews*, 279-281.
- Liu, W. H. (2005). Determinants of the semiconductor industry cycles. *Journal of Policy Modelling*, 27 (2005), 853-866.
- Liu, W.H., & Chyi, Y.L. (2006). A Markov regime-switching model for the semiconductor industry cycles. *Economic Modelling*, 23 (2006), 569-578.
- UNCTAD. (2021). Technology and Innovation Report.

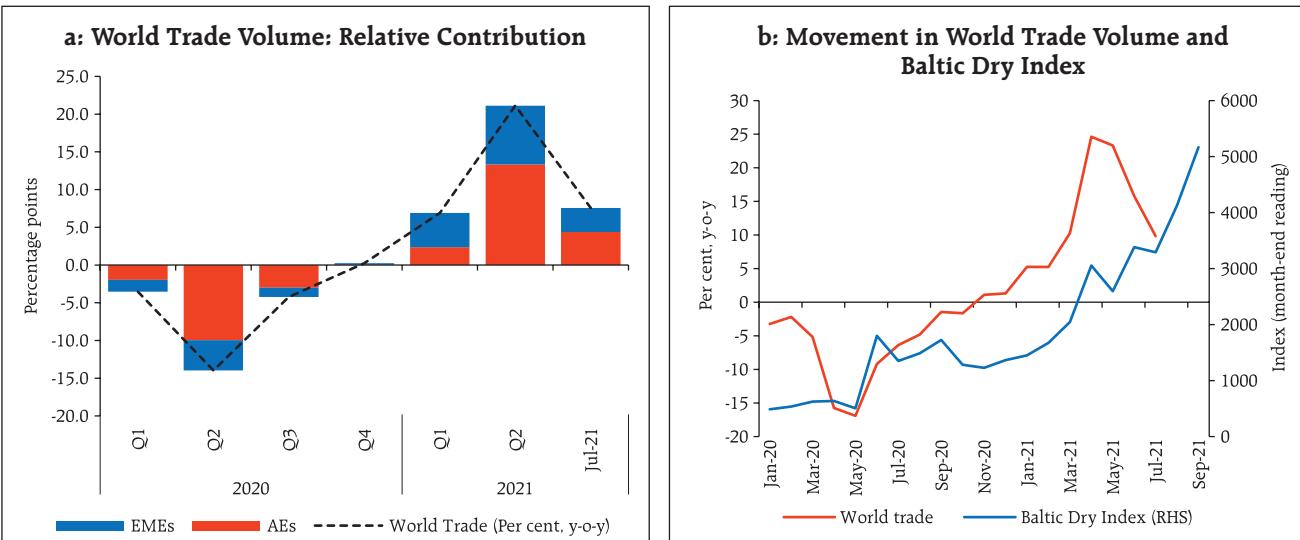
## V.2 Commodity Prices and Inflation

Global commodity prices have soared in 2021 so far, with intermittent corrections – the Bloomberg commodity price index increased by 20.7 per cent during April-September 2021. The food price index of the Food and Agriculture Organization (FAO) increased by 7.0 per cent between March and August 2021 (Chart V.3a). Prices of vegetable oil, cereal and dairy sub-indices have eased more recently because

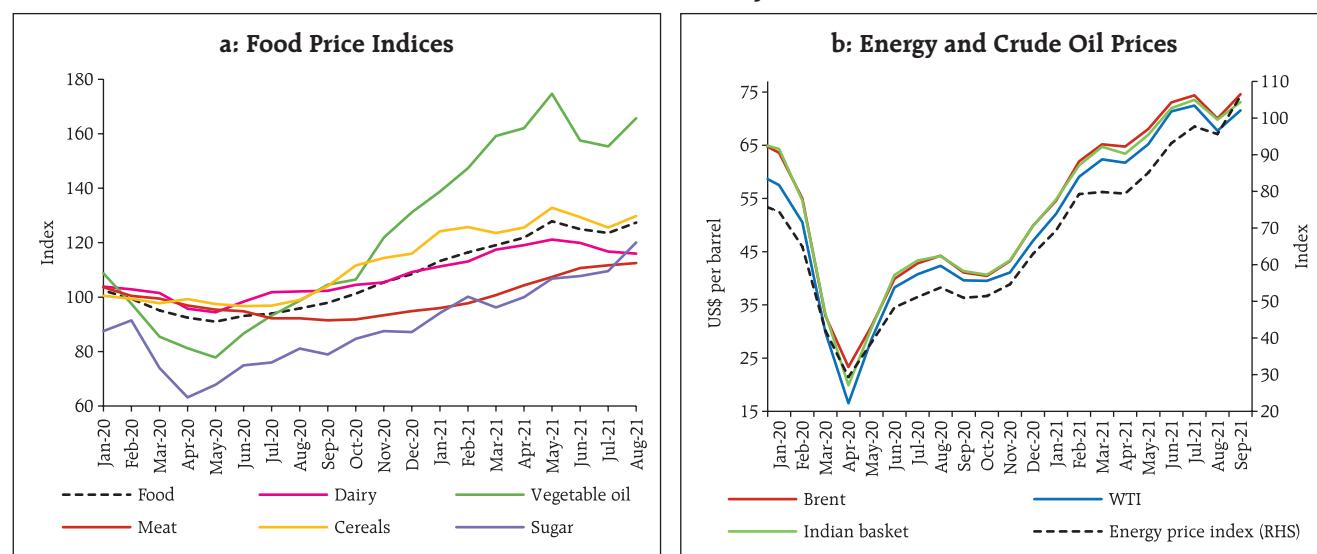
of seasonal production gains and softening import demand. In contrast, sugar and meat prices have continued to increase due to tightening supplies from major exporters amidst rising import demand.

Crude oil prices rallied unevenly since April on improved demand prospects. Brent crude crossed US\$70 per barrel in June, reaching its then highest level of 2021 in early July. From the second week of July, however, crude oil prices turned volatile –

**Chart V.2: World Trade Volume**



Sources: CPB Netherlands; and CEIC.

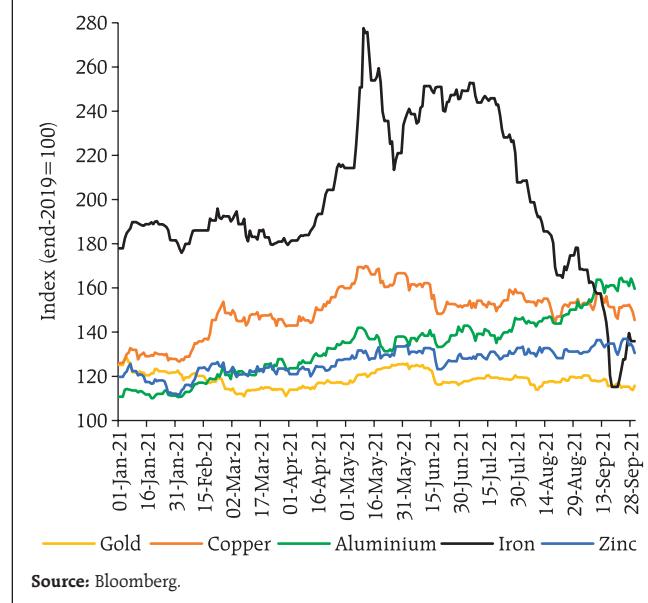
**Chart V.3: Commodity Prices**

Sources: Food and Agriculture Organization; and World Bank.

downward bias was imparted by rapid spread of the contagious delta variant, OPEC plus agreement to ease supply with an additional output of 400,000 barrels per day each month from August and rising stockpiles in the US. Price have firmed up since the latter part of August on tightening US supplies owing to slow recovery from disruption caused by Hurricane Ida and lower stockpiles in China. Brent crude prices ruled at nearly three-year highs at end-September, surging by 54.0 per cent on year-to-date basis.

Base metal prices measured by the Bloomberg's base metal spot index increased by 11.4 per cent during April-September 2021. The strong rally in prices witnessed in Q1:2021 continued into the first half of Q2 (Chart V.4). Most industrial metals, including copper and iron peaked in mid-May. The steady recovery in manufacturing activity across most major economies, along with rising supply bottlenecks, underpinned the metals bull run of H1:2021, sparking a debate on potential emergence of a fresh commodity super-cycle (Box V.2). Thereafter, prices for most metals have turned volatile in Q3, with iron giving up all early gains following China's pro-climate measures. Gold

prices rose in April and May on strong safe haven demand, but lost sheen in June on account of a strong US dollar. After remaining range-bound around the psychological level of US\$1,800 per troy ounce during July to early September, prices plummeted in September with sharp rise in the US treasury yields and the US dollar.

**Chart V.4: Metal Price Indices**

Source: Bloomberg.

### Box V.2: Global Commodity Prices: Is a Super Cycle Forming?

Global commodity markets have picked up momentum in 2021, with a 69.4 per cent increase in the Bloomberg commodity price index from the low of March 2020 (Chart V.2.1a). Metal prices have remained the frontrunner in the recovery (Chart V.2.1b). Prices of iron and tin surged to historic peaks, while copper and aluminium recorded over a decadal high as recovering demand was further propelled by speculative trading.

Super cycles are long-period cycles with periods of price upswings of roughly 10-35 years, and are generally perceived to be broad-based, affecting a wide range of commodities (Heap, 2005). They are rare but long-lasting. Such elongated cycles are attributed to structural shifts in the economy, characterised by prolonged period of strong demand outpacing supply. Three demand-driven super cycles have occurred since the late 19<sup>th</sup> century: during the US industrialisation which began in late 1800s through early 1900s; reconstruction in Europe and Japan in the aftermath of the second world war; and the most recent one driven by rapid industrialisation and urbanisation of China beginning in the early 2000s (Jerrett, 2021).

Following Cuddington and Jerrett (2008), the statistical filtering technique of an asymmetric Christiano and

Fitzgerald band-pass (BP) filter was deployed to decompose real metal prices (RP) into three components<sup>2</sup>: a long term trend (RP\_LTT); a super cycle component (RP\_SC); and other relatively shorter cyclical components (RP\_STC) such that:

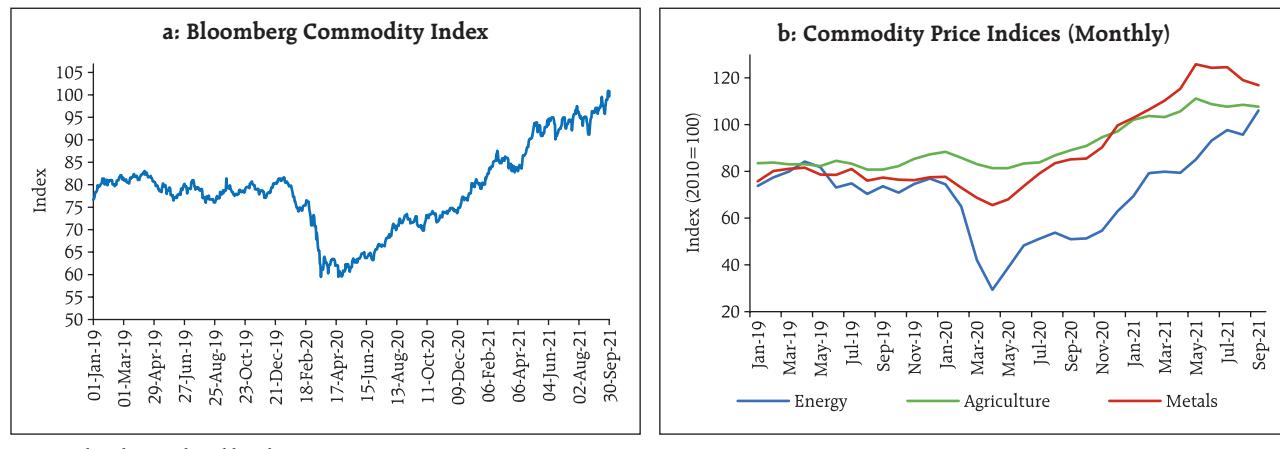
$$RP_t = RP\_LTT_t + RP\_SC_t + RP\_STC_t$$

In line with Heap's (2005) analysis, a super cycle ranges from 20 to 70 years and, therefore, a BP (20,70) filter has been applied on each price series to obtain its super cycle component. The long run trend is defined as a cyclical component with periods above 70 years and is extracted using a BP (70,∞) filter<sup>3</sup>, while short-term cyclical components are defined as cycles with periods of 2 to 20 years and extracted by using BP (2,20) filter.

The results corroborate the occurrence of three super cycles since the late 1800s (Chart V.2.2). Moreover, the super cycles in the six metals under consideration have strong contemporaneous correlation, except for aluminium-lead and aluminium-zinc (Table V.2.1).

The super-cycle component of each of these metals, barring aluminium and nickel, peaked around 2014-2016 though they remain above their long-term trend.

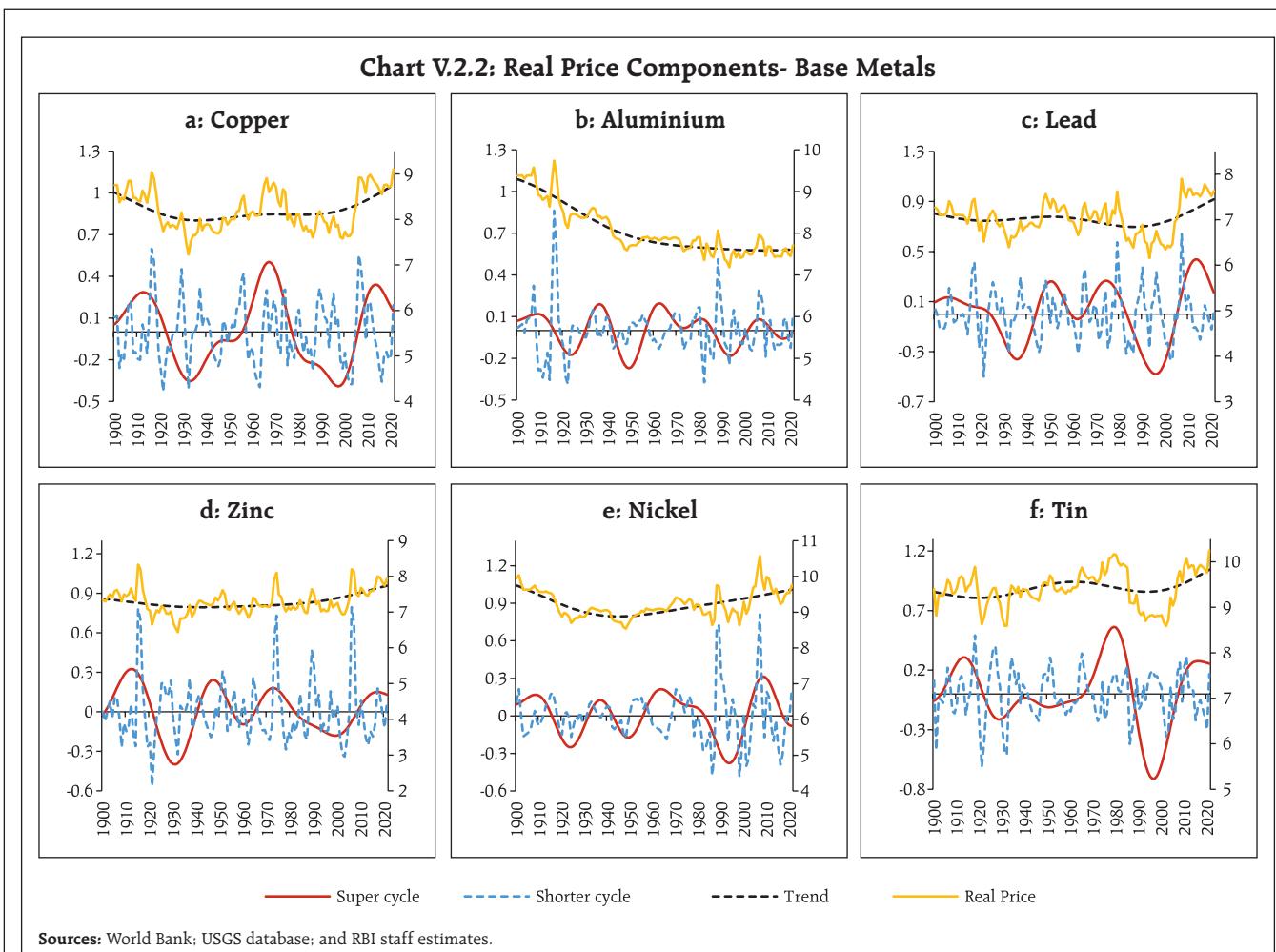
**Chart V.2.1: Commodity Market Developments**



(Contd.)

<sup>2</sup> The ACF BP filter has been applied to the natural logarithm of annual real metal prices of six non-ferrous metals, *viz.* copper, aluminium, lead, zinc, nickel and tin for the period 1900 to 2021. The annual prices from 1960 onwards are sourced from the World Bank. For prior period, back-casting is done by using the US Geological Survey (USGS) data. For 2021, the average of the monthly real prices (nominal prices deflated by the US CPI) from January to July is considered.

<sup>3</sup> Long term trend can also be defined as the actual series minus all the cyclical components with periods between 2 and 70 years (*i.e.*, both super-cycle and other shorter cyclical components) and thus BP (2,70) and BP (70,∞) can be treated as complements.



**Table V.2.1: Correlations between Super-Cycle Components of Real Prices**

	Aluminium	Copper	Lead	Tin	Nickel	Zinc
Aluminium	1.00					
Copper	0.32*	1.00				
Lead	-0.00	0.74*	1.00			
Tin	0.35*	0.56*	0.73*	1.00		
Nickel	0.81*	0.61*	0.47*	0.50*	1.00	
Zinc	-0.07	0.67*	0.71*	0.60*	0.26*	1.00

\*: Statistically significant at 1 per cent level.

**Source:** RBI staff estimates.

This suggests that commodities might still be in the downswing phase of the super cycle that began in early 2000s. In contrast, the shorter cycle components for all metals are showing an upturn, likely reflecting supply-side factors such as escalating transport and logistics frictions and costs. Moreover, the recent reversal in prices of some metals weakens the narrative of a new super cycle. Hence,

it is too early to classify the ongoing broad-based price escalation as a new commodity super cycle.

#### References:

Christiano, L. and T. Fitzgerald, 2003, "The Band Pass Filter," *International Economic Review*, Vol. 44, No. 2, May, pp. 435-465.

Cuddington, J.T. and D. Jerrett, 2008, "Super Cycles in Real Metals Prices?", *IMF Staff Papers*, Vol. 55, No. 4, December, pp. 541-565.

Heap, A., 2005, "China - the Engine of a Commodities Super Cycle," *Equities Research: Global*, Citigroup Smith Barney, March 31.

Jerrett, D., 2021, "How Super is the Commodity Cycle?", *Global Commodities Applied Research Digest*, Summer 2021, [http://www.jpmcc-gcard.com/digest-uploads/2021-summer/Page%2074\\_79%20GCARD%20Summer%202021%20Jerrett%20042021.pdf](http://www.jpmcc-gcard.com/digest-uploads/2021-summer/Page%2074_79%20GCARD%20Summer%202021%20Jerrett%20042021.pdf).

Prices firmed up across major AEs, pushing inflation above targets for most of them, barring Japan (Table V.3). For major EMEs, barring Indonesia and Thailand, headline inflation has remained close to the upper bound of the official target band or beyond, while for China, inflationary pressures have remained subdued in terms of consumer prices, notwithstanding strong upside pressures from producer prices.

The return of inflation in the US has been stark. CPI inflation hit a 13-year high, reaching levels not

seen since the global financial crisis. Fed's preferred measure of inflation, the personal consumer expenditures (PCE) inflation, lagged CPI inflation but was at 30-year high level during July-August due to high energy and food prices. The surge in pent-up demand following the re-opening of economy, persistent supply-side constraints and high input costs are lending upside to inflation. The Fed attributes the spike in inflation to transitory factors. In the Euro area, the inflation rate moved beyond the European Central Bank (ECB)'s target of 2 per cent, surging to a 13-year high of 3.4 per cent in September on rising energy costs and prices of non-energy industrial goods and services, besides unfavourable base effect. The ECB too, attributes the recent rise in inflation to transitory factors and expects it to moderate back to the target once pandemic-induced shocks wane. CPI inflation in the UK edged up above the target in May-June and eased back to the 2 per cent target in July. In August, however, the inflation rate soared to 3.2 per cent, the highest ever jump in rate, mainly due to an unfavourable base effect. In Japan, unlike its AE counterparts, CPI remained in deflation for the eleventh consecutive month in August as COVID-19 continued to impact demand, keeping core inflation subdued, while a sharp drop in monthly mobile phone charges added to the downside (Chart V.5a).

Among major EMEs, CPI inflation in Brazil has been above the upper bound of the tolerance band around the inflation target since February 2021. In August, CPI inflation rose to its highest reading since February 2016, primarily led by a surge in electricity and fuel prices amidst supply disruptions brought in by the worst drought witnessed by the country in almost a century. High global commodity prices, the depreciating Brazilian real and reviving demand are imparting upward pressure on prices. In Russia, inflation has been above the official target level since

**Table V.3: Inflation**  
(Per cent)

Country	Inflation Target (current)	Q3:2020	Q4:2020	Q1:2021	Q2:2021	Q3:2021
<b>Advanced Economies</b>						
Canada	2.0	0.2	0.8	1.4	3.4	3.9
Euro area	2.0	0.0	-0.3	1.0	1.8	2.9
Japan	2.0	0.2	-0.8	-0.5	-0.8	-0.4
South Korea	2.0	0.7	0.4	1.1	2.4	2.6
UK	2.0	0.6	0.5	0.6	2.0	2.6
US	2.0	1.2	1.2	1.8	3.9	4.2
<b>Emerging Market Economies</b>						
Brazil	3.75 ± 1.5	2.6	4.3	5.3	7.7	9.3
Russia	4.0	3.6	4.4	5.6	6.0	6.6
India	4.0 ± 2.0	6.9	6.4	4.9	5.6	5.4
China	-	2.3	0.1	0.0	1.1	0.9
South Africa	3.0-6.0	3.1	3.2	3.1	4.8	4.8
Indonesia	3.0 ± 1.0	1.4	1.6	1.4	1.5	1.6
Philippines	3.0 ± 1.0	2.5	3.1	4.5	4.4	4.6
Thailand	1.0-3.0	-0.7	-0.4	-0.5	2.4	0.7
Turkey	5.0 ± 2.0	11.8	13.5	15.6	17.1	19.3

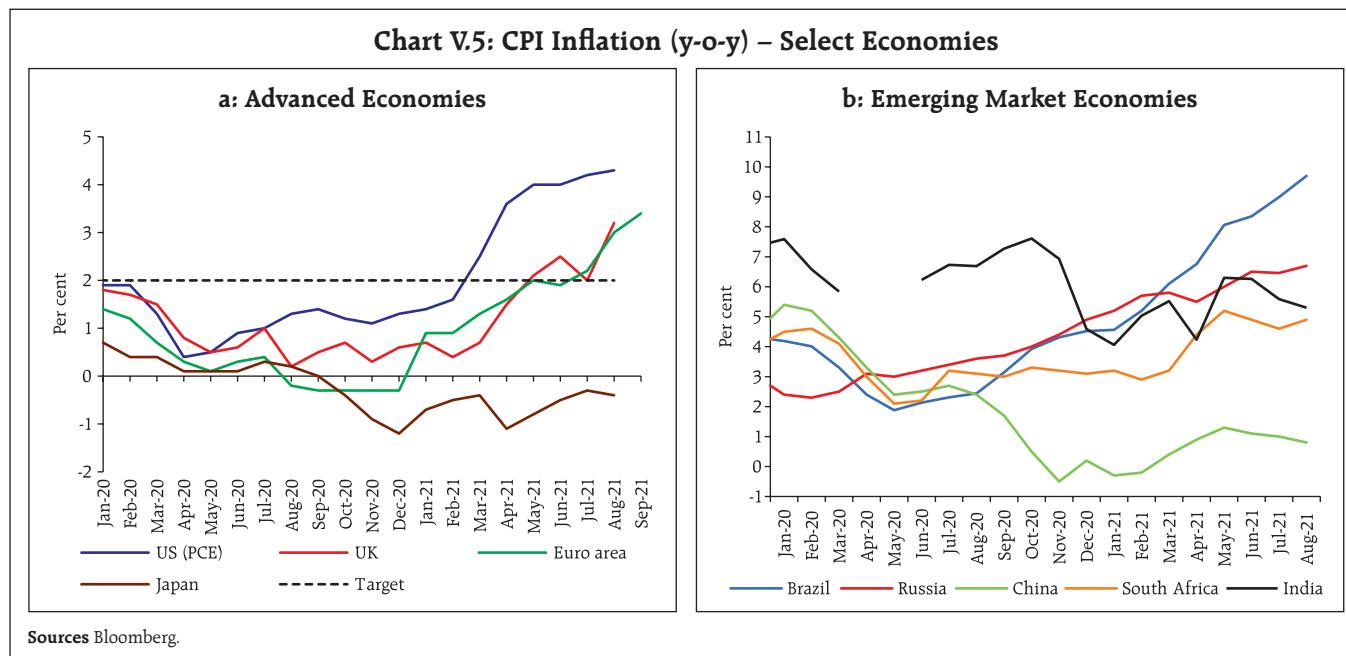
**Notes:** (1) Inflation for US is in terms of personal consumption expenditure price index.

(2) Quarterly inflation is the simple average of inflation in each month of the quarter. For Q3:2021, it is the July-August average for all countries except Euro area, South Korea, Indonesia, Phillipines, Thailand and Turkey, for which it is full quarter average.

(3) The ECB adopted new monetary policy strategy from July 8, 2021 under which a symmetric 2 per cent inflation would be targeted over the medium term unlike the earlier target of "below but close to 2 per cent". The Bank of Canada aims to keep inflation at the 2 per cent mid-point of an inflation control target range of 1-3 per cent.

(4) Brazil's inflation target for 2020 was 4.0 ± 1.5 per cent.

**Sources:** Central bank websites; and Bloomberg.



November 2020, scaling to a five-year high in August as rising inflation expectations, recovery in demand and strained supply capacity have kept inflationary pressures elevated. In South Africa, CPI inflation picked up from April due to increase in fuel costs, and high food and beverage prices. In June-July, however, inflation eased due to softening transport prices and favourable base effect before rising again in August on high fuel and food prices. China, on the other hand, remains an outlier with CPI inflation remaining highly subdued, primarily due to decline in food prices as also easing costs of transportation and communication amidst weak services sector demand (Chart V.5b). China's producer price index, however, has risen sharply, pushing factory-gate inflation to its highest level in 13 years in August as high raw material costs and persistent disruptions due to global supply shortages exert upward pressure.

### V.3 Monetary Policy Stance

Extraordinary policy measures by monetary and fiscal authorities continue to support economies

and ease financial conditions, helping to contain financial stability risks. The IMF estimates that since March 2020, US\$16.5 trillion or about 15.9 per cent of global GDP had been pledged as fiscal support in response to the pandemic, with higher support extended by AEs *vis-à-vis* the EMEs (Table V.4). While most of the fiscal measures in the EMEs had expired in 2020, almost US\$4.6 trillion worth of measures remain available to AEs as of early July 2021.

The total monetary support extended globally by central banks is estimated to be about US\$18.0 trillion as of August 2021<sup>4</sup>. This support has been predominantly in the form of asset purchases, around US\$11.6 trillion, followed by lending operations of US\$4.4 trillion.

<sup>4</sup> These are RBI staff estimates, based on BIS database available on <https://www.bis.org/publ/work934.htm>. This database is for 39 major economies – 11 AEs and 28 EMEs and numerical estimates for several measures listed are not available. As such the estimate might not fully reflect the policies taken by these central banks in response to COVID-19.

**Table V.4: Fiscal Support in Response to COVID-19**

(Amount in US\$ billion; Per cent as proportion of GDP)

Country	Amount	Per cent
<b>Advanced Economies</b>	-	<b>28.7</b>
of which,		
Canada	326	19.8
European Union	1,361	10.5
Japan	2,260	44.8
UK	893	33.0
US	5,838	27.9
<b>Emerging Market Economies</b>	-	<b>6.7</b>
of which,		
Brazil	221	15.4
Russia	89	6.0
India	232	8.7
China	903	6.1
South Africa	30	9.9
<b>World</b>	<b>16,500</b>	<b>15.9</b>

**Source:** World Economic Outlook Update, July 2021, IMF.

Monetary policy stances have diverged across countries, with a few major AEs and EMEs continuing to maintain an accommodative stance while others have begun/continued with the withdrawal of monetary stimulus.

The US Fed maintained the target range for the federal funds rate at 0 to 0.25 per cent and the monthly pace of asset purchases at US\$120 billion in all its meetings held in Q2 and Q3. In June, the Fed effected a hike of 5 basis points (bps) in the interest rate paid on required and excess reserve balances to 0.15 per cent. The interest rate on overnight reverse repurchase agreement (ON RRP) operations was also increased by 5 bps to 0.05 per cent. Effective July 29, the Fed merged the interest rates on excess reserves and required reserves to a single interest rate on reserve balances. The Fed also announced two standing lending facilities, both overnight and collateralised, *viz.*, domestic standing repurchase agreement facility and a repo facility for foreign and international monetary authorities. The latter – initially a temporary facility introduced in end-March 2020 and extended up to September 2021 – is now a permanent facility. The September Federal Open

Market Committee (FOMC) statement noted that if the progress towards its maximum employment and inflation goals continued as expected, a moderation in the pace of asset purchases would be warranted soon. The FOMC also doubled the per-counterparty limit for ON RRP operations to US\$160 billion per day, effective September 23, 2021.

The ECB maintained a hold on its policy rate and the quantum of asset purchases in its meetings in April and June. On July 8, the ECB unveiled its new monetary policy strategy under which a symmetric 2 per cent inflation target was adopted, as against the earlier target of below but close to 2 per cent. The Harmonised Index of Consumer Prices (HICP) remains the measure of the price level<sup>5</sup> and the primary monetary policy instrument is the set of ECB policy rates. With the policy rates ruling close to their effective lower bound, the ECB would likely resort to other instruments such as forward guidance, asset purchases, longer-term refinancing operations and other new policy instruments as required. As part of the strategy review, the ECB also announced a detailed roadmap up to 2024 for its comprehensive action plan on climate change. In its July meeting, the first under the new framework, the ECB maintained an accommodative monetary policy stance to meet its inflation target and provided forward guidance that interest rates would remain at their current level or lower till the inflation target was durably achieved. In its September meeting, the ECB announced a moderately lower pace of asset purchases under the Pandemic Emergency Purchase Programme (PEPP), without reducing the overall quantum of the purchase programme that is scheduled to end by March 2022.

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<sup>5</sup> As a multi-year project, the EU's statistical agency – Eurostat – will lead a project to include costs related to owner-occupied housing in the HICP to better measure the inflation relevant for households. In the interim, the ECB will also consider initial estimates of the cost of owner-occupied housing in conjunction with the other broader inflation measures for monetary policy assessment.

It has kept purchases under the Asset Purchase Programme (APP) unchanged.

The Bank of England (BoE) maintained a pause on the bank rate at its all-time low of 0.1 per cent and kept the total quantum of asset purchases unchanged in its meetings in May, June, August and September. In its August meeting, the BoE indicated that a modest tightening of monetary policy over its three-year forecast period is likely and it signalled that, given appropriate economic circumstances, it would begin unwinding its quantitative easing by not re-investing maturing assets once the bank rate is raised to 0.5 per cent<sup>6</sup>.

The Bank of Japan (BoJ) in its meetings in April, June, July and September kept the monetary policy parameters – the key policy rates and the quantum of asset purchases – unchanged. In July, the BoJ sketched the preliminary outline of the Fund-Provisioning Measure to Support Efforts on Climate Change. The new measure would come into effect in 2021 under which the BoJ would provide interest-free loans against collateral for up to one year, with possibility of rollover, for on-lending to projects that address climate change<sup>7</sup>. Moreover, banks would be allowed to add twice the amount of any borrowing under the scheme to their macro add-on balances, which would earn 0 per cent interest as against the policy rate, which is currently (-) 0.1 per cent.

The Bank of Canada (BoC) maintained its policy rate and the forward guidance in its meetings in April, June, July and September but effected tapers of CAD\$1 billion (approximately US\$0.8 billion)<sup>8</sup> in its weekly purchases of government bonds in the

April and July meetings, reducing the weekly pace of asset purchases to CAD\$2 billion (approximately US\$1.6 billion).

Central banks of four AEs, *viz.*, Iceland, Czech Republic, South Korea and Norway have raised their policy rates in 2021 so far. The central bank of Iceland has effected two hikes of 25 bps each and the Czech National Bank has raised rates thrice to a cumulative increase of 125 bps. Bank of Korea and Norges Bank raised policy rates by 25 bps in August and September, respectively (Chart V.6a).

Within the EMEs, there has mostly been *status quo* or a move towards unwinding monetary accommodation, though some countries have extended the stimulus also. For instance, the People's Bank of China (PBoC) increased the liquidity in the system by lowering the reserve requirement for most financial institutions by 50 bps effective July 15, freeing up about 1 trillion yuan (approximately US\$154.3 billion) of liquidity to support the real economy. The PBoC has, however, maintained the one-year Loan Prime Rate (LPR) at 3.85 per cent since April 2020.

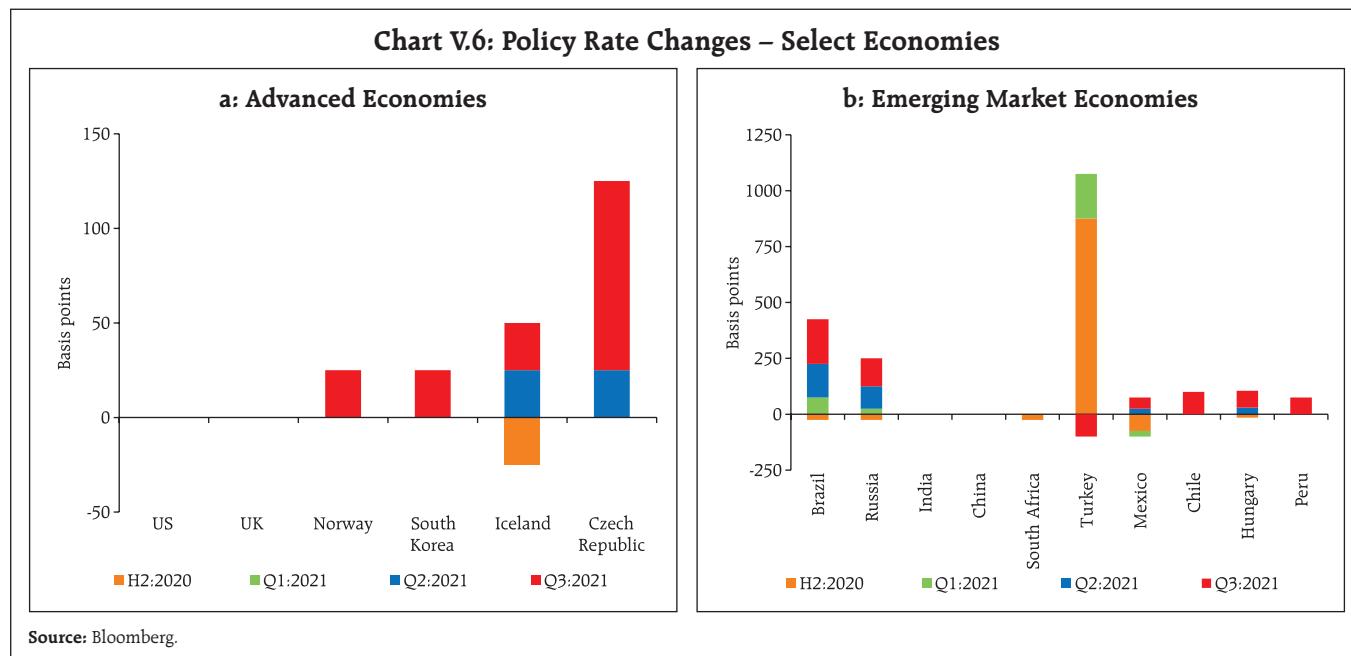
Amongst other BRICS central banks, Banco Central do Brasil followed up on its 75 bps rate action of March with equal hikes of 75 bps each in May and June and 100 bps each in August and September. The Bank of Russia followed up on its 25 bps rate hike of March with hikes of 50 bps each in April and June, 100 bps in July and 25 bps in September. The South African Reserve Bank maintained a pause in its May, July and September meetings.

The central bank of Turkey, which had maintained *status quo* since a hike of 200 bps in March 2021, cut rates by 100 bps in September attributing high inflation to transitory factors and noting that monetary tightening had lowered credit and domestic demand. Amongst other EME central banks, Banco de México hiked rates by 25 bps each in June, August

<sup>6</sup> The previous guidance of June 2018 had set a higher threshold of 1.5 per cent.

<sup>7</sup> Green loans/bonds, sustainability-linked loans/bonds with performance targets related to efforts on climate change and transition finance.

<sup>8</sup> The US\$ approximations for all amounts mentioned in another currency in this Chapter are based on the exchange rate (Bloomberg) on the date of announcement of the measure.



and September, while the Central Bank of Chile raised rates by 25 bps in July and 75 bps in August (Chart V.6b). The central banks of Peru and Hungary have also raised rates in recent months.

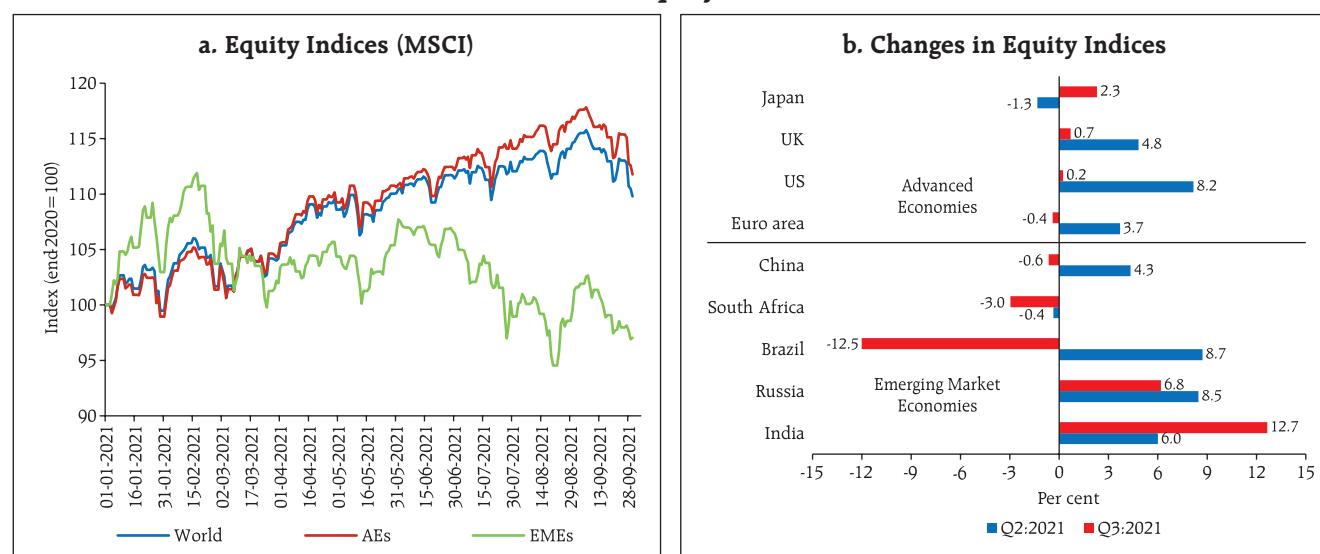
#### V.4 Global Financial Markets

Global financial markets remained buoyant and easy financing conditions prevailed; however, volatility returned to the markets in September. Stock markets in a few AEs and EMEs scaled fresh peaks in September but slid in most countries. Bond yields, which had remained low up to August, edged up in September due to large sell-offs. The US dollar rallied in the wake of higher inflation and inflation expectations and the Fed announcement on commencement of the US taper in the near future. The EME financial markets, unlike 2013, did not experience a major upheaval in Q3 despite taper guidance by the Fed.

Among AEs, the US equity markets continued to scale a new peak every month in Q2 and Q3, even after the Fed indication of likely taper. After peaking in early-September, the US market fell, led by technology stocks, and recorded its first monthly decline since January. Among other major AEs, European stock

markets had seven consecutive months of gains up to August – the longest rally since the end of the sovereign debt crisis in 2012 – which came to an end in September. Strong corporate earnings and the accommodative monetary policy stance of the ECB had helped keep the markets bullish. The UK stock indices rose during Q2 due to the rapid pace of vaccination, attractive valuations and high dividend yield but have been flat thereafter. The Nikkei, which was trending down since Q2 as Japan lagged the other three major AEs in its pace of vaccination and infection control, rose from the last week of August due to election fever and increased pace of vaccination overtaking the US.

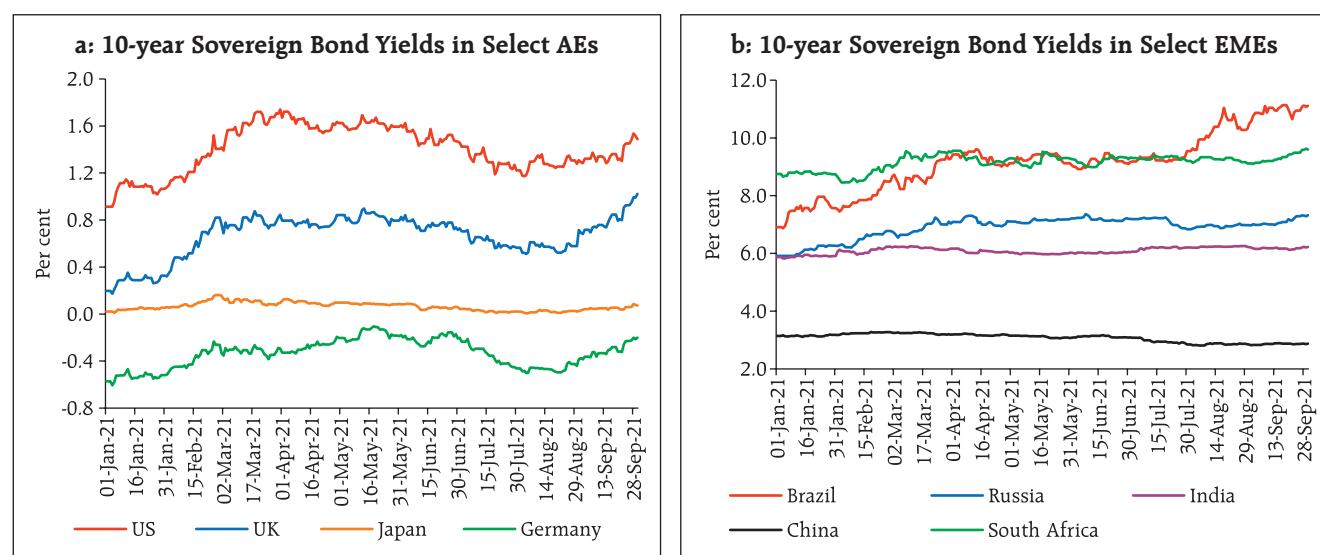
EME stock indices had been essaying the fault lines in global recovery, and trending down since June due to the two-speed nature of the recovery, moderation of capital flows and rapid spread of the delta variant of the virus (Chart V.7). The EME stock markets got buffeted in August with China's regulatory crackdown and continued to fall in September on concerns relating to China and change in monetary policy stance of several AEs. Stock markets in EMEs such as India and Russia, however, notched all-time highs in September.

**Chart V.7: Equity Markets**

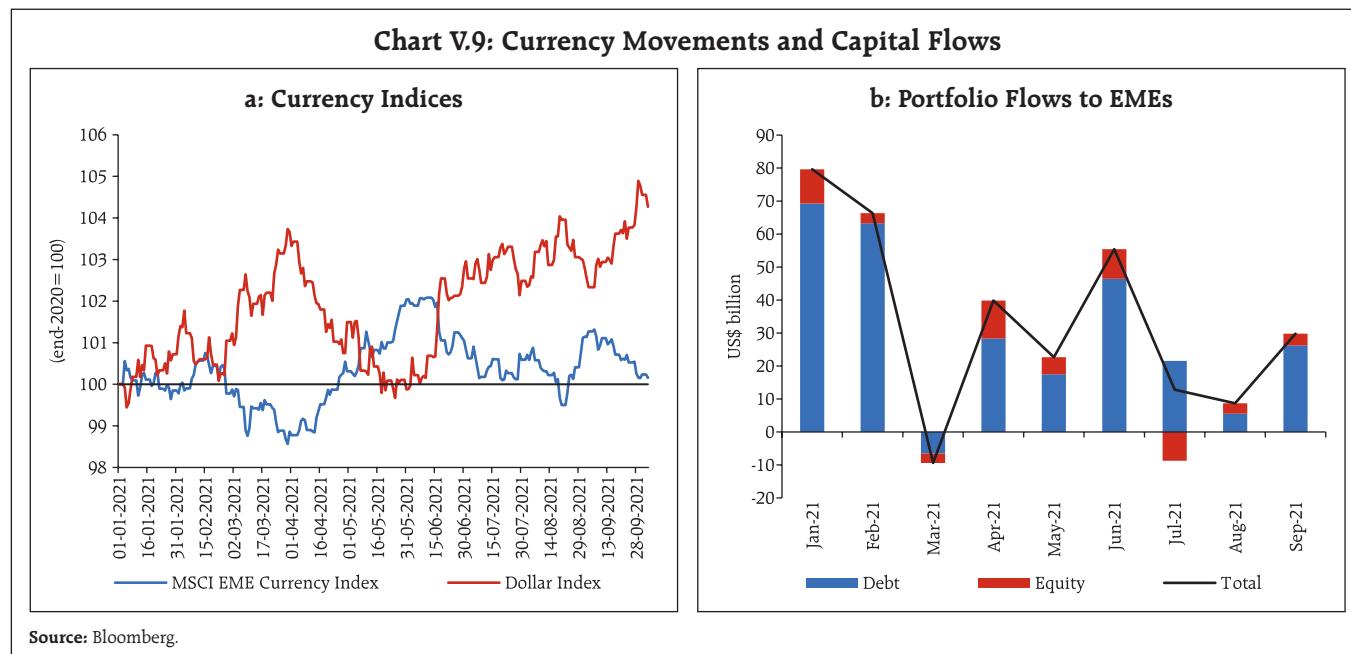
Source: Bloomberg; and RBI staff estimates.

Bond yields in major AEs trended down in Q2:2021 and remained range-bound in Q3 up to August, reflecting the accommodative monetary policy stance maintained by the Fed, the ECB and the BoJ. Also, due to the persistent threat to recovery with rapid spread of the delta variant, the safe haven demand for government bonds continued. Since the September monetary policy meetings of

the Fed and BoE, bond yields shot up sharply in most AEs led by large sell-offs. In the US, long-term treasury yields, which had risen at a rapid clip in Q1:2021 in line with rise in inflation expectations, treaded down in April-July even as inflation and inflation expectations remained high (Chart V.8a). In August, however, movements in long-term yields were more range-bound. Despite the significant rise

**Chart V.8: Bond Yields**

Source: Bloomberg.



in September, the 10-year yield at end-September was 25 bps lower than that prevailing at end-March 2021.

Yields in the EMEs moved bi-directionally till August – rising in those countries that began normalising monetary policy, while remaining soft in those with continued central bank support. EME bond yields rose in September, in line with the global trend (Chart V.8b).

In currency markets, the US dollar has been strengthening since June 2021 on better economic prospects for the US as also higher inflation outcomes. The dollar rally strengthened in September in expectation of commencement of US taper later in 2021. In contrast, the emerging market currencies have depreciated after peaking in the second week of June (Chart V.9a). This was mainly triggered by retrenchment of capital flows following the release of the FOMC statement where dot plots suggested two likely rate rises in 2023 as against no rate hike

forecast in March. Nevertheless, overall capital flows in September were higher than in August due to large sovereign bond issuances by EMEs (Chart V.9b). The MSCI Emerging Market Currency Index increased by 2.2 per cent in Q2:2021 but declined by 0.9 per cent in Q3:2021.

## V.5 Conclusion

The multi-speed economic recovery across countries is becoming increasingly susceptible to renewed bouts of rapid spread of infections. There has been a perceptible slowdown of economic activity across the globe in recent months, particularly in Asia. Inflation remains high across the world, with supply disruptions becoming more widespread. There is a risk that above target inflation may persist longer than anticipated in several economies. The pervading threat of the delta variant has led monetary authorities – that had earlier signalled unwinding – to be on hold, while incremental inflationary pressures have made others signal a sooner unwinding.



## SPEECHES

Beyond COVID: Towards a Stronger,  
Inclusive and Sustainable Economy  
Shaktikanta Das

Monetary Policy: Trial by Pandemic  
Michael Debabrata Patra

Regulatory Framework for Account Aggregators  
M. Rajeshwar Rao

Heed to Heal - Climate Change is the Emerging Financial Risk  
M. Rajeshwar Rao

Responsible Digital Innovation  
T Rabi Sankar



# **Beyond COVID: Towards a Stronger, Inclusive and Sustainable Economy\***

**Shaktikanta Das**

I wish to thank the President and other office bearers of the All India Management Association (AIMA) for having invited me to participate in this convention. This is a national management convention and it is apt that the AIMA is organising it. In normal times and even more in times of severe stress, it is the quality and capacity of management that makes the critical difference and enables businesses to not only survive but come out stronger. I am happy to note that the AIMA is advancing the cause of management profession by collaborating with industry, government, academia and students.

The theme of this convention, "Beyond Recovery: New Rules of the Game" is well-timed. After an eighteen-month long battle, there are signs – and I repeat signs – that the world is emerging from the shadow of coronavirus. As we emerge from the present crisis and look beyond, this is the right time to step back a little and plan for an economy which is stronger, more inclusive and sustainable. I propose to highlight the contours of such an economy in my remarks today.

## **Envisioning Life Beyond COVID-19**

COVID-19 is a watershed event of our era. It has caused widespread devastation of life and livelihood and it is still haunting the global economy in several ways. There are very few parallels of a shock like COVID-19 in history which left policymakers with no template to navigate through the crisis. Both health systems and human endeavour to deal with the crisis

were stretched to the limit. The pandemic is likely to leave an indelible mark on the way economies and societies function. When we emerge from the crisis it would most likely be a new dawn, a new normal.

The pandemic has induced several structural changes which have significantly altered the way we work, live and organise businesses. With greater shift to work from home, technology has gained potential to boost productivity, by saving on travel time, boosting sales on online platforms and accelerating the pace of automation. As a result, consumption pattern is changing and companies are resetting their supply chains both globally as well as locally. These changes will have wider ramifications for the economy.

Global supply chain is undergoing significant shifts; companies and various authorities have to be nimble enough to capitalise on these opportunities. Automation and robotics will threaten low-skilled workers and those in the contact-intensive sectors. The shift to online have also created new opportunities and challenges for employment-intensive sectors like travel, hotels, restaurants and recreation. Some of these changes are going to stay beyond the pandemic. These structural changes need to be kept in mind while formulating strategies for participative growth process.

At another level, the pandemic has affected the poor and vulnerable more, especially in emerging and developing economies. Daily wage earners, service and informal sector workers were badly hit. Their employment and income opportunities were curtailed. The lasting damage inflicted by the pandemic on these segments is of serious concern for inclusive growth. In the medium to long-run, both efficiency and equity will greatly matter for sustainable growth and macroeconomic performance.

Technology adoption which was earlier limited to core sectors has now permeated to several other areas, viz. education, health, entertainment, retail trade and

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\* Keynote Address by Shri Shaktikanta Das, Governor, Reserve Bank of India - Wednesday, September 22, 2021 - Delivered at the 48<sup>th</sup> National Management Convention of the All India Management Association (AIMA).

offices. The pandemic has also caused disruptions and induced reallocation of labour and capital within and across sectors. The firms which were quick to adopt technology and were flexible in working from off-site are attracting more capital and labour. On the other hand, firms which were not up for the challenge and competition will have to leave the space for the more dynamic ones. These forces of 'creative destruction' are expected to boost productivity by encouraging greater competition, dynamism and innovation in several sectors of the economy.

### **The Indian Scenario**

Let me now turn to the Indian scenario. In the post-pandemic world, India's prospects are underpinned by several dynamic sectors. I wish to briefly touch upon some of them.

First, information technology (IT) services and information technology-enabled services (ITES) backed by entrepreneurial capabilities and innovative solutions have emerged as key strength of the Indian economy over the years. There is a growing league of Unicorns in India reflecting its potential for technology-led growth. The country has added several unicorns over the last year to become the third largest start up ecosystem in the world. Underpenetrated Indian markets and large IT talent pool provide an unprecedented growth opportunity for new age firms. Further, the COVID pandemic has provided a new impetus to technology-driven companies such as fintech, edtech and healthtech which are likely to see increased funding activity in the coming years.

Second, India's digital momentum is expected to continue with a strong demand in areas such as cloud computing, customer troubleshooting, data analytics, work place transformation, supply chain automation, 5G modernisation and cyber security capabilities. India has the natural advantage to benefit from the emerging trends in these areas. The drive towards full fiberisation of the economy

has to go hand in hand with the establishment of data centres across the nation for data storage and processing. Ensuring universal, affordable and fast broadband internet access all through the country can play a critical role in advancing productivity and employment opportunities. Further, the stronger push to digitalisation and automation can have spillover effects on ease of doing business. Medical advances and process accelerations can spark a renaissance in public health innovations and delivery. E-commerce is emerging as another promising sector for India. It has benefited from growing market, increased internet and smartphone penetration and COVID-induced shifts in consumer preferences. Various initiatives taken by the government, namely Digital India, Make in India, Start-up India, Skill India and Innovation Fund have created a conducive eco-system for faster growth in the digital sector.

Third, the pandemic has brought to focus what India can achieve in the area of manufacturing. In the pharmaceutical sector for the first-time in history, vaccines were developed and administered within a year with India remaining a forerunner and a global leader in vaccine manufacturing. Investors have shown confidence in the Production Linked Incentive (PLI) scheme introduced by the government. Following this initiative, India is now home to almost all the leading global mobile phone manufacturers and during the recent period, India has turned from being an importer to an exporter of mobile phones. This trend is likely to spillover to other sectors also. The presence of global players would help in enhancing India's share in Global Value Chain (GVC) and building up a resilient supply chain network. Greater GVC participation would also enhance the competitiveness of India's large and Micro, Small and Medium Enterprise (MSME) supplier base.

Fourth, the global push towards green technology, though disruptive, can create new opportunities in several sectors. For example, the automobile sector

is moving towards electric vehicles. With greater innovation, electric vehicles are slowly converging to internal combustion engines (ICE) in cost and performance. The biggest Electric Vehicle car maker is not from the traditional car maker companies. Similar creative disruption is also visible in the two-wheelers space. With supportive policies, greener technologies can yield economic and environmental benefits.

Fifth, India's energy sector is also witnessing significant churning and technological transformation. As India grows rapidly, its energy demand is expected to pick up in the near future. Currently, a large part of the energy demand is met from fossil fuels, with significant import dependence. India aims to increase the share of non-fossil fuels to 40 per cent (450GW) of total electricity generation capacity by 2030, as part of the goals set under the Paris agreement within the United Nations Framework Convention on Climate Change (UNFCCC).<sup>1</sup> With a view to give a boost to the agriculture sector and to reduce environmental pollution, the Government had launched the Ethanol Blended Petrol (EBP) Programme, which would help in cleaner air besides saving on fuel imports. The percentage of ethanol blending by Oil Marketing Companies has risen from 1.5 per cent in 2013-14 to 5.0 per cent in 2019-20 and is further expected to rise to 8.5 per cent in 2021-22, on course to achieve 20 per cent target by 2025.<sup>2</sup> The drive towards renewable energy is a step in the right direction both for energy security as well as environmental sustainability, which are critical for our long-term economic growth.

Sixth, in the post-pandemic period, global trade will remain vital for faster recovery. Reflecting congenial policy environment and supportive external demand, India's exports have rebounded, with a broad-based double-digit growth during the first half of

2021-22. India's exports of agricultural commodities, including Geographical Indications (GI) certified products to newer destinations, offer favourable prospects for overall export. Furthermore, exports of engineering goods – which account for around one-fourth of India's total exports – experienced robust growth across product categories and newer markets. To further strengthen the export potential, there is a need to enhance the share of high-tech engineering exports to achieve an ambitious engineering export target of US\$ 200 billion by 2030<sup>3</sup>.

To achieve our objectives in all the areas which I have outlined so far, we need a big push to infrastructure particularly in areas of health, education, low carbon and digital economy in addition to transport and communication. In addition, the warehousing and supply-chain infrastructure will be critical to bolster value addition and productivity in the agriculture and horticulture sector. This will create employment opportunities in semi-urban and rural areas and promote inclusive growth. The demand for warehousing infrastructure has also gone up in tier-2 and tier-3 cities in the wake of steep jump in online trading. Moreover, investment in intangible capital such as research and development and skill upgradation of human resource has strong and positive impact on productivity. Some empirical evidence suggests that the impact of investment in intangible capital on labour productivity is more than investment in tangible capital.<sup>4</sup>

Seventh, a dynamic and resilient financial system is at the root of a stronger economy. India's financial system has transformed rapidly to support the growing needs of the economy. While banks have been the primary channels of credit in the economy, recent trends suggest increasing role of non-bank

<sup>1</sup> PIB Press Release "Key Declaration on Climate Change to be signed at the India CEO Forum on Climate Change" dated 4<sup>th</sup> November 2020.

<sup>2</sup> Roadmap for Ethanol Blending in India 2020-25, Government of India, June 2021.

<sup>3</sup> PIB Press Release "EEPC celebrates 50th year of Engineering Exports Awards" dated 10<sup>th</sup> December 2019.

<sup>4</sup> IMF (2021), "Boosting Productivity in the Aftermath of COVID-19", G-20 Background Note, June.

funding channels. Assets of non-bank financial intermediaries like NBFCs and mutual funds have been growing; funding through market instruments like corporate bonds has also been increasing. This is a sign of a steadily maturing financial system – moving from a bank-dominated financial system to a hybrid one. Substantial progress has been made to fortify internal defence mechanism of financial institutions to identify, measure and mitigate risks. This is a continuing process and efforts by all stakeholders have to be sustained.

### **Towards a more Inclusive and Sustainable Economy**

History shows that the impact of pandemics, unlike financial and banking crises, could be a lot more asymmetric by affecting the vulnerable segments more. The COVID-19 pandemic is no exception. Within countries, contact-intensive service sectors employing large number of informal, low-skilled and low-wage workers have been hit harder. In several emerging and developing economies, lack of health care access has disproportionately affected the family budget of the poor. Even education which was provided online during the pandemic excluded the low-income households due to the lack of requisite skills and resources. Overall, there are evidences across countries that the pandemic may have severely dented inclusivity.

The global recovery has also been uneven across countries and sectors. Advanced economies have normalised faster on the back of higher pace of vaccination and larger policy support. Emerging and developing economies are lagging due to slow access to vaccine and binding constraints on policy support. Multilateralism will lose credibility if it fails to ensure equitable access to vaccine across countries. If we can secure the health and immunity of the poor, we would have made a great leap towards inclusive growth. Global co-operation remains vital for rapid progress on this front.

Needless to add that inclusive growth in the post-pandemic world will require cooperation and participation of all stakeholders. In India, collaborative effort of various stakeholders is helping accomplish a seemingly difficult task of accelerating the pace of vaccination. The private sector is developing and manufacturing the vaccines; the Union Government is centrally procuring and supplying it; and the state governments are delivering and administering it in every nook and corner of the country. India is now administering a record of about one crore doses of the vaccine every day across all segments of the population.

A major challenge to inclusiveness in the post-pandemic world would come from the fillip to automation provided by the pandemic itself. Greater automation would lead to overall productivity gain, but it may also lead to slack in the labour market. Such a scenario calls for significant skilling/training of our workforce. We also need to guard against any emergence of "digital divide" as digitisation gains speed after the pandemic. Further, the need for professional human resources trained in science, technology, engineering and mathematics (STEM) is rising briskly. Major technology-based firms have expressed their intention to hire many new professionals with skills in these areas. In the short-term, the supply of such a workforce cannot be increased by the traditional educational system, and thus there is a need for close involvement of corporates in the design and implementation of courses suitable to the changing industrial landscape.

As we recover, we must deal with the legacies of the crisis and create conditions for strong, inclusive and sustainable growth. Limiting the damage that the crisis inflicted was just the first step; our endeavour should be to ensure durable and sustainable growth in the post-pandemic future. Restoring durability of private consumption, which has remained historically the mainstay of aggregate demand, will be crucial

going forward. More importantly, sustainable growth should entail building on macro fundamentals via medium-term investments, sound financial systems and structural reforms. Towards this objective, a big push to investment in healthcare, education, innovation, physical and digital infrastructure will be required. We should also continue with further reforms in labour and product markets to encourage competition and dynamism and to benefit from pandemic induced opportunities. The Production Linked Incentive (PLI) scheme announced by the Government for certain sectors is an important initiative to boost the manufacturing sector. It is necessary that the sectors and companies which benefit from this scheme utilise this opportunity to further improve their efficiency and competitiveness. In other words, the gains from the scheme should be durable and not one-off.

Again, for growth to be sustainable, a transition towards greener future will remain critical. The need for clean and efficient energy systems, disaster resilient infrastructure, and environmental sustainability cannot be overemphasised. Due consideration should be given to individual country roadmaps keeping in mind country-specific features and their stage of development while adopting policies towards climate resilience.

## Conclusion

On the whole, while the pandemic has created enormous challenges, it can also act as an inflection point to alter the course of development. Enhanced adoption of technology will give impetus to productivity, growth and income. Leveraging technology in implementing government schemes, training and skill development programme for the unemployed, promoting women-friendly work atmosphere and supporting education of the poor and marginalised sections would be areas of focus as we embark on our journey beyond COVID-19. Income and job creation with digitalisation and innovation can bring about a new age of prosperity for a large number of people.

Many of us have grown up reading Mahatma Gandhi's *Talisman*<sup>5</sup> in text books – "I will give you a talisman. Whenever you are in doubt...Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny?" As we strive to build a stronger and resilient India, this pearl of wisdom that we learnt long ago remains as relevant even today.

Thank you. Stay Safe. Namaskar!

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<sup>5</sup> Pyarelal, Gandhi, M. (1958). *The Last Phase Vol. II. Ahmedabad: Navajivan Publishing House*, P. 65



## ***Monetary Policy: Trial by Pandemic\****

***Michael Debabrata Patra***

Shri Nilesh Shah, Chairman, CII National Committee on Financial Markets, Shri Vishal Kampani, Co-Chair, Ms. Anuradha Salwan, Head, Financial Sector, CII, Ms. Amita Sarkar, Deputy Director General, CII and friends, I am honoured to be invited to deliver the keynote address in this plenary session of the 12<sup>th</sup> edition of the Financial Markets Summit organise by the Confederation of Indian Industry (CII). Over the years, the Summit has emerged as a flagship event for taking stock of the evolution of financial markets in India and envisioning future vistas of development. This year's theme of the role of financial markets in building India for a new world could not have been more timely and relevant, especially in view of the critical role of financial markets through the pandemic and in preparing for a post pandemic world. Over its journey of more than 125 years, the CII has undertaken a pioneering role in endorsing and sponsoring the importance that financial markets have in India's development strategy. The expansion of the Summit's agenda in 2016 to include all segments of the market continuum in its ambit has mainstreamed it and brought together market participants, industry, regulatory authorities and civil society with the objective of nurturing and developing our financial markets so as to achieve the aspirational goals of our nation. This theme will resonate throughout my address today, to which I will now turn.

Across the world, the conduct of monetary policy is on the razor's edge. Incoming data seem to suggest

that the global recovery might be faltering or at least losing pace. Meanwhile, inflation that checked in on the back of elevated commodity prices and supply disruptions induced by the pandemic, lingers and the jury is still out on whether it is transitory or persistent. Financial markets, cosseted by massive and prolonged monetary and fiscal stimuli to a point where they are far out of connect with the real economy, are now on edge, trying to second guess the start of normalisation. Under these conditions, monetary policy stances and actions are diverging widely and this by itself is imparting uncertainty in a high-wire situation. Consequently, financial markets, which hitherto basked in clear central bank communication of extended accommodation, are now reading between the lines and outside them in order to time the taper.

In India, the economy is emerging from the second wave of the pandemic, scarred but resilient relative to the first wave's experience. The recovery appears broad-based and the pivot is manufacturing, but output is still below pre-pandemic levels, especially in contact-based services. Inflation is moderating from the shock spike of May, but core inflation is sticky at still elevated levels. In the financial markets, divergent behaviour is evident – the exuberance of equities *versus* the cynicism of bonds. Monetary policy has been on a prolonged pause in terms of the policy rate after reducing it to its lowest level ever. The stance of 'as long as necessary' accommodation is reflected in ample liquidity in the system, with net surpluses of close to ₹ 9 lakh crore being absorbed by the RBI on a daily basis. Markets are, however, constantly reassessing this stance with incoming data and seek definitive reassurance on the future course of policy.

In this challenging environment, I will use this opportunity to review the year and a half of living with the pandemic and draw lessons therefrom, however formative they might be at this stage. This will be followed by an assessment of the operational

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\* Address by Dr. Michael Debabrata Patra, Deputy Governor, Reserve Bank of India at the Financial Markets Summit of the Confederation of Indian Industry, Mumbai on September 16, 2021. Valuable comments from Sitikantha Pattanaik, Indranil Bhattacharya, Binod Bihari Bhoi and Asish Thomas George, and editorial help from Vineet Kumar Srivastava are gratefully acknowledged.

conduct of monetary policy in the form of liquidity management *vis-à-vis* the revised framework that was instituted just before the pandemic. Before closing, I propose to draw a tentative sketch of the way forward, hopefully into pandemic-free times.

## II. Lessons from the Pandemic

The pandemic has been both humbling and empowering – humbling because it exposed the frailty of human existence in the face of a virus; empowering because it revealed the indomitability of human courage and endeavour. This polarity is evident in all aspects of the pandemic experience, and the conduct of monetary policy imbibed it too. In order to deal with this once-in-a-lifetime crisis, an extraordinary response was warranted and the RBI rose to the challenge. It is important to note, however, that this became feasible because of the intrinsic flexibility built into the institutional framework in which monetary policy in India is nested. To my mind, that is the most important lesson to be drawn from the pandemic experience for the conduct of monetary policy.

Five years ago, India instituted a flexible inflation targeting (FIT) framework as its monetary policy regime. I recall that at that time there were widespread misgivings in public discourse and within the RBI. It was perceived as a blinkered monetary authority pursuing a narrow inflation target single-mindedly and at the cost of societal objectives when a full-service central bank reflected the aspirations of the nation. The actual experience with FIT in India has exorcised that spectre.

Central banks are synonymous with price stability. Achieving and maintaining price stability when inflation is on the rise inherently involves a sacrifice of output because the only way in which an increase in interest rates can bring down prices is by raising the cost of credit, restraining spending and curbing demand. The essence of FIT is to protect

growth by minimizing the sacrifice of output which is the 'price' of price stability. Symmetrically, FIT also protects the economy from deflation by adopting a positive – rather than zero – lower bound. This is what the 'F' in FIT stands for. In India, it is achieved by five specific features: (a) a dual mandate – "price stability, keeping in mind the objective of growth"; (b) an inflation target defined in averages rather than as a point; (c) achievement of the target over a period of time rather than continuously; (d) a reasonably wide tolerance band around the target to accommodate measurement issues, forecast errors, supply shocks and as vividly demonstrated recently, black swan events like the pandemic; and (e) failure being defined as three consecutive quarters of deviation of inflation from the tolerance band, rather than every deviation from the target.

Over the period 2016-20, inflation averaged 3.9 per cent, which was hailed as a defining success of macroeconomic management. A combination of 'good luck' and 'good policy' is attributed to this outcome. Be that as it may, monetary policy earned a credibility bonus due to the anchoring of inflation expectations, while investors and businesses reposed confidence in India's prospects, and we became a preferred habitat for capital flows. Ahead of the incidence of the pandemic, however, these gains were discounted by the view that India's monetary policy framework has not been tested. And then, the pandemic arrived.

In 2019-20, the Indian economy was into a downturn which had been maturing over the past few years, taking down real GDP growth to 4 per cent which is the lowest in the decade of the 2010s. The MPC had launched into an easing cycle from February 2019 to stimulate economic activity – preceded by rate reductions, the term accommodative was first articulated in the monetary policy stance in June 2019. As soon as the World Health Organisation (WHO) declared COVID-19 as a pandemic in March 2020, the MPC in off-cycle meetings pre-emptively reduced the

policy rate by 115 basis points to its lowest level ever. In sync, the RBI infused massive amounts of liquidity cumulating to 8.7 per cent of GDP and undertook several so-called unconventional measures to reach out to specific sectors, institutions and market segments. Inflation had averaged 4.8 per cent in 2019-20; although above target, it was well within the tolerance band and stemmed from a narrowly based food price shock. This was the first use of flexibility pre-emptively under the new framework – the MPC judged that inflation was tolerable, affording policy space to address the more immediate threat to growth.

As may be recalled, the pandemic's first wave brought the economy to a standstill, crippling almost all aspects of activity and even mobility. A casualty was the collection of price quotations for compiling consumer price index (CPI) inflation, the metric by which the framework is evaluated. Imputations had to be resorted to and this was regarded as a break in the CPI series. In the process, an upside bias was built into data when they started getting collected and compiled from June 2020. As the pandemic intensified, supply and logistics disruptions became severe, mark-ups rose to claw back lost incomes and taxes on petroleum products were increased. Driven up by this unprecedented vortex of forces impacting together, inflation breached the upper tolerance band in the second and third quarters of 2020-21, averaging 6.6 per cent. This experience demonstrated yet another aspect of the "F" in FIT – in view of GDP contracting by 24.4 per cent in the first quarter and by 7.4 per cent in the second, the MPC could afford to stay its hand despite two continuous quarters of deviation from the tolerance band and look through an inflation episode which was obviously driven by transitory factors. I do not want to dwell on a hypothetical 'what-if' scenario in which the MPC, concerned about two quarters of deviation and impending accountability failure, would have reacted by raising the policy rate. That would have been disastrous for India.

The MPC's call turned to be correct. In the fourth quarter of 2020-21, the usual seasonal moderation in food prices came into play and, along with some improvement in supply conditions as the economy unlocked, inflation eased to an average of 4.9 per cent. Congenial financial conditions engendered by monetary policy helped to revive the economy. Growth emerged out of a technical recession in the third quarter and in the fourth, it regained positive territory. Looking back, it was the combination of framework flexibility and astute judgement that healed the economy and helped it rebound.

The pandemic came back in a second wave in the first quarter of 2021-22 and this time around, the vicious circle of forces that drove up inflation earlier were reinforced by external shocks in the form of elevated commodity prices, especially of crude and edible oil. In May and June, inflation overshot the upper tolerance band. With cost-push pressures impacting core inflation and inflation expectations, the MPC's dilemma became sharper because firms showed evidence of some improvement in pricing power and the drivers of inflation were shifting.

The MPC has voted to keep the policy rate unchanged and the stance as accommodative as before. Time will tell if the call is true. Data arrivals vindicate the MPC's stance, with inflation having moderated into the tolerance band, and growth in the first quarter in almost perfect alignment with the RBI's forecast. Again, flexibility in the policy framework in the form of measuring the target in terms of quarterly averages rather than single monthly readings worked well.

### **III. Liquidity Management: The Plumbing in the Architecture**

Liquidity management operationalises monetary policy. Our operations in money, debt and forex markets are aimed at a market-based exchange rate with interventions only to smoothen volatility, a

calibrated approach to capital account liberalisation as a process rather than an event and stability in the evolution of interest rates. They provide us with intermediate solutions to the trilemma of fixed exchange rate, open capital account and independent monetary policy rather than the corner solutions that render it impossible. Independence in monetary policy relates to the freedom to choose a rate of growth and inflation that is independent of global growth and inflation but is right in the national interest.

Under the provisions of the RBI Act and related regulations, it is the MPC which decides on the policy rate while the RBI is enjoined to achieve it and thereby implement monetary policy. The criterion of implementation is transmission of the policy rate to the weighted average call money rate, which is the operating target, and further across the term structure of interest rates in the economy.

In this context, an animated debate has ensued about the RBI having reduced the reverse repo rate more than proportionately, thereby creating an asymmetrical liquidity corridor. One side of the debate argues that this effectively undermines the MPC's decision on the repo rate because under conditions of ample liquidity, the RBI has to switch to an absorption mode and the effective policy rate becomes the reverse repo rate. I thought I would use this opportunity to address this issue squarely.

First, India has adopted a corridor system for guiding the evolution of money market rates, as opposed to a point for the operating target. Accordingly, in normal times, the reverse repo rate is mechanistically linked to the repo rate by a fixed margin, as is the marginal standing facility (MSF) rate. Hence, whenever the MPC adjusts the policy repo rate, the entire corridor adjusts to align with that decision in a symmetric manner. Pandemic times are, however, drastically different and call for out-of-the-box responses. This is accentuated by the fact that the credit channel of transmission broke down because of

muted demand and risk aversion, and the RBI decided to operate through other segments of the financial markets to keep the lifeblood of finance flowing. In a situation in which the repo rate has been reduced by a cumulative 250 basis points since February 2019 and is constrained from being reduced further by elevated inflation, the reduction in the reverse repo rate eased financial conditions so much that it facilitated record levels of access to finance by corporates and governments at low interest rates/spreads. This is a shining example of flexibility in liquidity management, complementing similar flexibility in the monetary policy framework. Effectively, the RBI employed the corridor itself as an instrument of policy, running it in absorption mode and the operating target aligned with the lower bound of the corridor rather than in the middle. This was undertaken by almost all central banks during the pandemic. It was also undertaken by the RBI to manage the taper tantrum of 2013 but on the upper side of the corridor.

Second, the suggestion to adjust the reverse repo rate asymmetrically relative to the repo rate was made by an external member of the MPC, as a perusal of the published minutes of its meetings will reveal. Furthermore, market participants also gave us similar feedback in pre-policy consultations. In effect, the RBI followed this counsel and the written resolutions of the MPC not just in letter, but also in spirit. By no means is the asymmetric corridor cast in stone. As normalcy returns, markets will return to regular timings. They will require normal liquidity management operations and a regular and symmetric LAF corridor, as envisaged under the liquidity management framework announced in February 2020. Currently, however, the need to revive and sustain growth on a durable basis and mitigate the impact of the pandemic while keeping inflation within the target going forward warrants monetary policy accommodation mirrored in ample liquidity flushed through the system and easy financial conditions.

Third, the RBI has announced a graduated time path for variable rate reverse repo (VRRR) auctions with a view to restoring them as the main operation under the February 2020 liquidity framework. This has been misconstrued in some quarters as a liquidity tightening measure. Nothing can be farther from the truth. At the end of September up to which VRRRs auctions have been announced, the daily surplus absorbed under the liquidity adjustment facility (LAF) will still be around ₹ 9 lakh crore – the same level as today – if not higher, more than half of which would still be under the fixed rate reverse repo. The RBI will remain in surplus mode and the liquidity management framework will continue in absorption mode. It is our hope that credit demand will recover and banks will get back to their core function of financial intermediation as soon as they can. This is the natural and the RBI-preferred manner in which surpluses in the LAF can be reduced.

A less compelling point is that VRRRs are effectively a way of remunerating excess reserves, thereby injecting additional liquidity into the system. It is not, and I would emphasise this, it is not a signal either for withdrawal of liquidity or of lift-off of interest rates. Signals of the latter will be conveyed through the stance that is articulated by the MPC in its future resolutions. We don't like tantrums; we like tepid and transparent transitions – glidepaths rather than crash landings.

#### **IV. The Way Forward**

The outlook is overcast with the pandemic. Future waves may have to be navigated on the voyage beyond into a world that can live with COVID-19 without loss of life and livelihoods. On this journey, the course of monetary policy will be shaped by the manner in which the outlook for growth and inflation evolves.

Our surveys suggest that seasonally adjusted capacity utilisation in manufacturing is expected to recover in the second half of the year, but the catch-

up with trend may take more time. Inventories of raw materials remain below pre-pandemic levels and are expected to be drawn down further. In conjunction with improving production and order books, this suggests that demand is gradually recovering. For the economy as a whole, the output gap - which measures the deviation of the level of GDP from its trend – is negative and wider than it was in 2019-20. Given these developments and with the GDP outcome for the first quarter coming in just a shade below the RBI's forecast, the projection of growth of 9.5 per cent for the year as a whole appears to be on track. Even so, as Governor Shri Shaktikanta Das pointed out in a recent interview, the size of the economy would just about be exceeding the pre-pandemic (2019-20) level<sup>1</sup>.

In the MPC's assessment, inflationary pressures are largely driven by supply shocks. Although shocks of this type are typically transitory, the repetitive incidence of shocks is giving inflation a persistent character. Contributions to inflation are emanating from a narrow group of goods – items constituting around 20 per cent of the CPI are responsible for more than 50 per cent of inflation. The analysis of inflation dynamics indicates that the easing of headline inflation from current levels is likely to be grudging and uneven. First, the distribution of inflation has skewed to the right with high variance – a large number of items is massed in a long fat right tail, pulling the mean of the distribution to the right of the median. To us, this indicates persistence of supply shocks. Second, over the months ahead, supply augmenting measures taken by the government should mend disruptions and imbalances, alleviating some cost pressures, but the pass-through of imported price pressures to retail prices remains incomplete. Third, turning to second order effects, house rentals remain subdued and rural wage growth is muted, but rising staff costs suggest that incipient wage pressures are building in the

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<sup>1</sup> Financial Express, July 16, 2021.

organise sector as workplaces fill up. Our surveys of the manufacturing, services and infrastructure firms are also pointing to an increase in selling prices in the period ahead.

The MPC remains committed to its primary mandate of price stability, numerically defined as 4 per cent with a tolerance band of +/- 2 per cent around it. Taking into account the outlook on growth and inflation and keeping in mind the inherent output costs of disinflation, it is pragmatic to envisage a glidepath along which the MPC can steer the path of inflation into the future. The MPC demonstrated its commitment and ability to anchor inflation expectations around the target of 4 per cent during 2016-20. Confronted with a once-in-a-century pandemic, the MPC had to tolerate higher average inflation of 6.2 per cent in 2020-21. The envisaged glidepath should take inflation down to 5.7 per cent

or lower in 2021-22, to below 5 per cent in 2022-23 and closer to the target of 4 per cent by 2023-24. The rebalancing of liquidity conditions will dovetail into this glidepath, but the choice of instruments is best left to the judgment of the RBI with its considerable experience with such tapers.

#### V. Conclusion

Monetary policy is all about the feasible. This inherently imposes a trade-off with the desirable. Pragmatism, gradualism and calibration are its distinctive features, except in challenging times when central banks become defenders of the first resort or as it is said, the only game in town when the chips are down. Every crisis makes them wiser, hones their skills and strengthens their commitment to the goal of macroeconomic and financial stability to promote sustainable and inclusive growth.

## *Regulatory Framework for Account Aggregators\**

*M. Rajeshwar Rao*

I extend my gratitude for this invitation and opportunity to be here with you all. Hope all of you are keeping safe in these challenging times.

Technology has transformed our lives in this increasingly interconnected world with mobiles and hand-held devices enabling ubiquitous access and broader reach. It has concomitantly enabled businesses to penetrate new markets and new geographies which they were hitherto unable to reach. This growth of technology also has the capacity to transform financial intermediation as access to financial data when harnessed to sophisticated technology creates the potential to bring changes in the delivery of products and services, consumer service, financial products from what we had experienced and grown accustomed to over the years. In the financial space, regulators across the globe over the last few years have played an enabling role to unlock access to the financial data buried within the books of the financial institutions books through initiatives such as Payment System Directive (PSD2) in Europe and Account Aggregator in India. The key impact of these initiatives has been the democratisation of data and the shift of power over data accessibility and usage to the owners of data rather than to holders of data.

In the recent years, technology-driven newer modes of financing, financial business models, specialised financial services and products have enabled FinTech driven innovation in areas such as P2P lending, wealth management, microfinance, smart-contract, AI/ML based decision analysis systems

and robo-advisory, etc. However, fragmentation of financial data across different financial service providers creates hurdles to effectively utilise it to address the credit needs of the individuals and to provide comprehensive financial solutions to them.

With a favorable start-up ecosystem by the Government, India has seen massive investments into financial services sector. It has further accelerated with the surge in e-commerce and smartphone penetration. The integration of fintech based delivery of products and services with the formal channels has extended the last-mile availability of financial services. I believe that the Reserve Bank has been ahead of the curve in adoption of financial technologies and has come out with appropriate enabling regulations for new products and services when the industry itself was at nascent stage. Peer to Peer (P2P) lending, Account Aggregator (AA) and credit intermediation over "digital platform only" NBFCs are cases in point where the regulation has helped the industry to grow in a systematic and robust manner. RBI's initiatives on UPI, Regulatory sandbox and innovation hub are also testament to our proactive fintech initiatives.

However, keeping in view the theme of this event, allow me to focus on the issues around the institution of and the framework around Account Aggregators for today.

### **Account Aggregators- Initiative of RBI**

The framework for AA was issued on September 02, 2016 by the Reserve Bank with the objective of facilitating aggregation of all financial assets of an individual. The approach was to make sharing and aggregation of financial data possible in a secure, transparent, and efficient manner by setting-up an intermediary which will also be responsible for the customers' consent management. These intermediaries are AAs, which are also registered as Non-Banking-Financial-Companies with the Reserve Bank.

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\* Remarks of Shri M. Rajeshwar Rao, Deputy Governor, Reserve Bank of India - September 02, 2021- during a virtual event organised by iSpirt.

Account Aggregator retrieves or collects information related to financial assets of a customer from the holders of such information (termed as Financial Information Providers (FIPs)) and aggregates, consolidates and presents it to the customers or specified users (termed as Financial Information Users (FIUs)). The transfer of such information is based on an explicit consent of the customer and the response is envisaged to occur in real-time. Data cannot be stored by the aggregator or used by it for any other purpose and shall be shared only with the regulated financial entities. The Directions require robust data security and customer grievance redressal mechanism to be in place. The AA should have proper consent architecture and audit trails should be available. The directions require Financial Information Providers (FIPs) to implement interfaces that will allow an Account Aggregator to submit consent artefacts and authenticate each other, to enable secure flow of financial information to the Account Aggregator.

#### **Advantages of AA ecosystem**

AA framework assists in decision-making required for provision of various financial services viz., lending, loan monitoring, wealth management, personal finance management, etc., by eliminating paper trails. Needless to mention that it is not an exhaustive list. Further, AAs can facilitate the access to financial services and credit to earlier underserved and unserved segments by reducing information asymmetry.

Let us take examples of MSMEs. Undoubtedly, MSMEs play a pivotal role in economic development and creation of employment. However, they sometimes face obstacles in accessing credit from formal channels due to lack of acceptable collateral and verifiable data about their financial health. Disruptions to businesses due to the COVID-19 pandemic conditions have further worsened this credit gap. In the current environment, their financial data resides with multiple regulated entities and it becomes difficult for the

MSME borrowers to consolidate this data and share it with the lending institutions. If not an obstacle, it can still cause delays in the credit sanction process and affects its (i.e. MSMEs) ability to access credit in a timely manner. In order to solve this problem AA can act as an intermediary in aggregating and presenting the financial data based on an explicit consent from the customer. AAs can consolidate all consented transactional data, including cash-flow statements across lenders. Data would be fetched real-time directly from the source, tamper-proof and at a low cost. This would bring down the cost and burden of verifying the data and compliance cost for the borrower.

#### ***Second Stage initiatives under AA framework in India: "Technical Specifications"***

As business of AAs grow, it is feasible for different categories of financial institutions under jurisdiction of different financial regulators to talk to one another over their respective technology-based platforms. Seamless movement of data over different institutions with complete confidentiality will be a *sine qua non* for orderly growth and smooth functioning of the AA framework. To ensure seamless and secured flow of data across AAs, FIPs and there would be a need to have some generic technical standards prescribed for the AA ecosystem participants so that movement of data is duly authorised and secure.

Generic technical standards should aim to ensure that - i) there is smooth and consent-driven flow of information across the participants in the AA set up; ii) interoperability in the AA framework is ensured; iii) integrity of data flowing across the participants is enforced and iv) Scope for future development is not restricted.

Towards this end, Reserve Bank Information Technology Pvt Ltd (ReBIT), a wholly owned subsidiary of the Reserve Bank, in consultation with the us has come out with a set of open API-based technical

standards. The key features of these technical standards are recommended so as to ensure that the design of AA ecosystem is data-blind; based on electronic consent; generates non-repudiable audit trails and allows for interoperability and layered innovation.

The regulatory features of AA framework, viz. explicit and electronic consent for data sharing, audit trails, data blind AA platform, etc. are progressive and pre-emptive in nature. The customer has full control over the information that is being shared through AA and is also in charge over consent mechanism (grant/revoke). These measures will ensure that apprehensions around privacy and concerns regarding data protection are largely addressed. AA framework also benefits FIUs as they get access to the financial information of the potential customers on real-time basis which reduces the turnaround time for provision of financial services, thereby achieving the convenience and speed demanded by customers.

#### ***Challenges and way forward for the AA ecosystem in India:***

The larger goal of AA is to empower customers and reduce information asymmetry and is aimed at ensuring that the customer has full control over the information that is being shared through AA and for what purpose. AA framework also benefits FIUs as they get access to the financial information of the potential customers on real-time basis and thus reduces the turnaround time for provision of financial services. AAs can thus bolster the lending ecosystem which can make India a data-rich country and boost digital economy.

While the regulatory intent has been well received from all quarters, a good piece of regulation will come to naught if the desired objectives of the regulation

are not met. The desired objectives in the case of AA ecosystem will be attained when large number of customers/FIUs are on boarded over the AA platforms and they are able to get aggregated data in a form and manner as desired by the users in a completely safe and secured environment. What is also equally important is that FIPs and FIUs tap into the vast potential of this innovative platform. The system will function optimally only when a variety of customers' accounts maintained across different financial entities cutting across financial sector regulators are linked to the AA. For this to happen, the FIPs need to see value in the framework. This in my view is the key to development of a viable business model for AA ecosystem in India. As a regulator, we have created the launch pad by first coming out with the regulatory framework and then with prescribing the 'Technical Standards' for the AA through ReBIT.

The AA ecosystem is still at a nascent stage of development but given the sensitivity of the platform on account of the nature of data handled by it, it becomes an imperative to ensure that the growth is orderly. As the system grows and matures, newer business models and customer offerings will pour in. While RBI is open and encouraging to innovation, we need to bear in mind the fact that there is a need to maintain balance between innovation and spirit of the AA regulatory structure.

Let me conclude at this point by reiterating that from the Reserve Bank perspective we do support innovation in financial space, but this support and encouragement will be done while ensuring that we develop and grow a robust financial system to support a vibrant and growing economy.

Thank You.



# ***Heed to Heal - Climate Change is the Emerging Financial Risk\****

**M. Rajeshwar Rao**

A very good morning to all of you. I am thankful to CAFRAL for having given me an opportunity to interact with the participants of the Virtual Conference on Green and Sustainable Finance.

The theme of today's Conference i.e., Green and Sustainable Finance is highly contextual. While the pandemic brought in a myriad set of challenges for the authorities around the world in framing and implementing policies for supporting lives and livelihoods, it has also given us time to pause, reset and reflect on several things including the issue of providing a sustainable, greener and better future for our succeeding generations. The impact of climate change is increasingly seen and felt as it plays out across the globe in different forms be it floods in the United Kingdom, heatwaves and wildfires in Canada and Australia or natural calamities in various parts of India. This Conference organise by CAFRAL (Centre for Advanced Financial Research and Learning) gives us an occasion to gather our thoughts and brainstorm on the road ahead on this critical issue.

Climate change is possibly the biggest threat staring at the face of humanity. How we tackle this challenge will be a defining moment of our times. The latest report of the Intergovernmental Panel on Climate Change<sup>1</sup> (IPCC) released last month has further highlighted the need for urgent action in addressing climate change. The report is a stark reminder for all nations that unless we start taking remedial actions urgently, the world is in for difficult times.

Let me try to drive home this point by quoting from the report: "*We can't undo the mistakes of the past. But this generation of political and business leaders, this generation of conscious citizens, can make things right. This generation can make the systemic changes that will stop the planet-warming, help everyone adapt to the new conditions and create a world of peace, prosperity and equity. Climate change is here, now. But we are also here, now. And if we don't act, who will?*"

## ***How climate change is affecting us and financial institutions***

Environmental degradation and climatic change is impacting everything around us. The Global Risks Report 2021 of the World Economic Forum (WEF) has identified extreme weather, climate action failure and human environmental damage as the top risks by likelihood, and climate action failure as the second most impactful risk (only after infectious disease). The IPCC report highlighted that climate crisis is affecting every region in the world in multiple ways. It provides new estimates of the chances of crossing the global warming level of 1.5°C in coming decades and warns that unless there is immediate, rapid, sustained and large-scale reduction in greenhouse gas emissions, limiting planet-warming to close to 1.5°C or even 2°C will be beyond reach.

A report of the Ministry of Earth Sciences, Government of India released last year concluded that since the middle of the twentieth century, India has witnessed a rise in average temperature, a decrease in monsoon precipitation, a rise in extreme temperature, droughts, and sea levels, as well as increase in the intensity and frequency of severe cyclones. There is compelling scientific evidence that human activities have influenced these changes in the regional climate. Given the profile of the event, it will be worthwhile to deliberate a bit further on the interlinkages between climate-related risks and financial institutions.

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\* Keynote Address delivered by Shri M. Rajeshwar Rao, Deputy Governor, Reserve Bank of India on September 16, 2021 at the Virtual Conference on Green and Sustainable Finance organised by CAFRAL. The inputs provided by Shri Pradeep Kumar, Shri Nitin Jain, Shri Brij Raj and Shri Sunil Nair are gratefully acknowledged.

<sup>1</sup> <https://www.ipcc.ch/reports/>

These climate trends and events have a direct bearing on the economy and financial system including banks. Uncertainty around the severity and timing of climate and environment related impact is a source of financial risk and may have a bearing on the safety and soundness of individual financial institutions/entities and in turn the stability of the overall financial system. It, therefore, becomes incumbent on financial institutions to manage the risks and opportunities that may arise from environmental degradation and a changing climate.

Climate-related financial risk refers to the risk assessment based on analysis of the likelihoods, consequences and responses to the impact of climate change. Thus, Climate-related financial risks may arise not just from climate change but also from efforts to mitigate these changes. One such example is investment behaviour. Globally many investors have already started to move away from firms which generate greater environmental costs or engage in activities which are likely to cause environmental harm, sometimes collectively referred as 'high-emitting sectors'. Such a trend may result in a loss of funding or increase in financing costs for high-emitting entities which ultimately generates viability concerns around such entities. Another important dimension for the financial entities is the reputational impact. Reputational concerns arise when customers financed by the financial institutions carry on business activities which have an adverse environmental impact. These risks have already started manifesting and are impacting the economy and financial system.

The good news is that the financial institutions have started recognising this threat. In a recent international survey<sup>2</sup>, climate change topped the list of long-term risks for banks for the first time since its inception over a decade back. More than nine in ten (91 per cent) of the surveyed bank chief risk officers

(CROs) viewed climate change as the top emerging risk over the next five years. The Financial Stability Report<sup>3</sup> (FSR) of July 2021, highlights the fact that climate change risks are ascending the hierarchy of threats to financial stability across advanced and emerging economies alike. Consequently, the need for an appropriate framework to identify, assess and manage climate-related risk has become an imperative.

***Climate risk is also a risk to financial firms, and it is starting to worry banks and regulators***

Climate change and its impact is increasingly being acknowledged as a key risk driver for the financial system by governments, regulators and financial firms. Climate risks can impact the financial sector through two broad channels; first - physical risks which mean economic costs and financial losses resulting from the increasing severity and frequency of extreme weather events and long-term climate change and second - transition risks which arise as we try to adjust towards a low-carbon economy. It is, therefore, important to understand these risk drivers which are likely to affect the financial firms. Let me elaborate a bit further on them.

*Physical Risk Drivers*

Physical risk drivers are directly observable and often refer to frequent extreme weather events which inflict direct economic costs and financial losses on financial firms as well as longer-term but gradual shift in the climate. Such *acute physical risks* arise from extreme climate change related events such as heatwaves, landslides, floods, wildfires and storms. On the other hand, *chronic physical risks* are longer term events as they arise from gradual shifts of the weather patterns such as changes in precipitation, extreme weather variability, ocean acidification and rising sea levels and average temperatures. Importantly, physical risk impact depends largely on geographical locations as different regions display different climate patterns.

<sup>2</sup> How resiliency in risk management is the new top priority for banks | EY - Global

<sup>3</sup> Financial Stability Report, Reserve Bank of India, July 2021 (<https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=1174>)

### *Transition Risk Drivers*

Transition risks essentially reflect as compliance cost when we embark upon the process of adjustment towards a low-carbon economy. This would include changes in government policies, market and customer sentiments and necessity for technological upgradation. Mandated climate-related mitigation plans could cause decrease in financial valuation or downgrade of credit ratings for businesses which are violating climate norms. Such plans can also cause a shift in market power from one firm to another through introduction of subsidies to compliant firms.

### ***Climate risk is difficult to measure and quantify***

The broader issue which we need to be aware of and respond to is that climate change is affecting financial firms through both - direct as well as indirect channels and has a number of elements which present unique challenges and may, in fact, require a *de novo* approach to financial risk management. The key elements of climate change outcomes are:

- The impact is far-reaching in its breadth and magnitude, relevant to multiple lines of business, sectors and geographies.
- Given the unprecedented nature of climate change outcomes, historical data and traditional backward-looking risk assessment methods are unlikely to adequately capture future impacts.
- Climate risks may materialise over uncertain and extended time horizons which generally extend beyond typical financial and business cycles.
- We also have to be prepared for uncertainty of outcomes even where we are able to foresee the nature of events.

It is, therefore, important to develop a better understanding of the interaction between climate risks and business activities of financial institutions,

as well as the compounding effect such risks may have on various prudential risk categories, for example:

- Rising frequency and severity of extreme weather events can impair the value of assets held by the banks' customers, or impact supply chains affecting customers' operations, profitability and business viability affecting assessment of credit risk.
- Shifts in investor preferences could lead to decline in valuation and increased volatility in bank's investment books requiring change in the provision for market risk capital.
- Increased demand for precautionary liquidity to respond to market volatility arising from extreme weather events may induce need for higher liquidity buffers.
- Disruption in business continuity given the impact on the financial firm's infrastructure, systems, processes and staff.

The financial firms and banks are thus exposed to climate-related risk through its derivative impact on all risks which a bank or a financial firm face including, underwriting risk, reputational risk and strategic risk. Therefore, it is important to recognise the impact of climate risk on financial firms and plan for it.

Although the physical and transition risk drivers and transmission channels through which climate risks affect financial institutions are increasingly apparent, quantification of those risks remains a challenge for financial firms and their supervisors. Measurement efforts have been hampered by data gaps and methodological hurdles, many of which are unique to climate risk and contribute to elevated uncertainty in estimates of climate-related risks. For instance, assessment of the potential impact of climate change may require precise data on the location of a borrower's assets and business operations, as well as information on local weather patterns for those locations. It may also require knowledge of a

counterparty's carbon emissions and of policies in different industries and jurisdictions. Data at this level of granularity is often unavailable or difficult to acquire, presenting challenges in calculating the magnitude of climate-related financial risks.

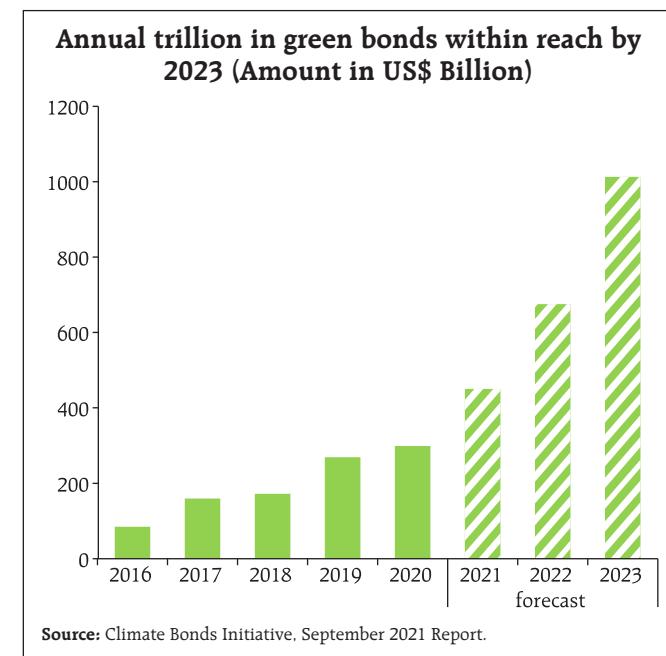
#### ***Case to act early and ensure orderly transition***

Both climate change and the transition to a carbon-neutral economy have the potential to affect economy and by extension, general welfare of the people. Hence, there is a clear benefit to acting early and ensuring an orderly transition. While transition costs may be higher in the short-term, they are likely to trend much lower in the long-run when compared to the costs of unrestrained climate deterioration.

It is thus, vital to make the financial system more resilient in the face of the potential costs of extreme weather events. The central bank community is aware of this and is engaged in working on this area much like the consolidated work undertaken after the Global Financial Crisis (GFC) which had added resilience to the financial sector and it has come in handy during the pandemic. But more than that supporting innovation in new technologies (clean energy and climate-related R&D) is paramount, as is acting and investing in green infrastructure that uses better standards and lower-carbon production processes. The financial industry has a role in and responsibility to help develop new financial instruments to channelise savings towards green initiatives to make them more sustainable, rewarding, and impactful. Green and sustainable finance is, in general, the route financial sector is taking in this transition.

#### ***Green Bonds: Gaining momentum***

At a conceptual level, "green finance" can be defined<sup>4</sup> as financing of investments that deliver environmental benefits in the broader context of environmentally sustainable development. These environmental benefits include, for example,



reductions in air, water and land pollution, reductions in greenhouse gas (GHGs) emissions and improved energy efficiency. Such a definition is directionally clear whilst allowing for different technical interpretations by countries. In particular, interest in green bonds and green finance is progressively gaining momentum as it has become a priority for many issuers, asset managers and governments alike. Global issuance of green bonds surpassed \$250 billion in 2019 - about 3.5 per cent of total global bond issuance (\$7.15 trillion)<sup>5</sup>. Projections<sup>6</sup> estimate that global issuance of green bond is likely to reach \$450 billion this year and that there is high possibility of issuance surpassing \$1 trillion in 2023.

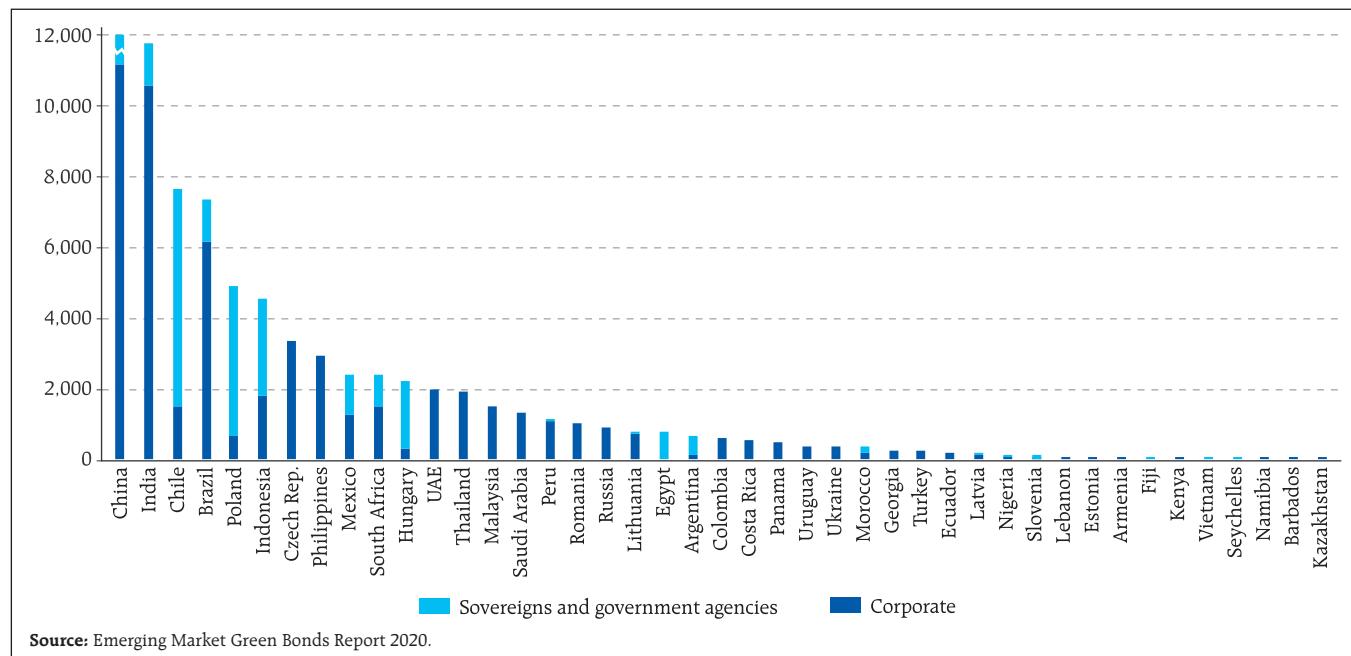
Overall, developed economies contributed major part of green bond issuance globally. Among the emerging economies, India occupies the 2<sup>nd</sup> spot (after China) in the cumulative emerging market Green Bond Issuance, 2012-2020 (US\$ million)<sup>7</sup>.

<sup>5</sup> Green bonds and carbon emissions: exploring the case for a rating system at the firm level ([bis.org](http://bis.org))

<sup>6</sup> [https://www.climatebonds.net/files/reports/cbi\\_susdebtsum\\_h12021\\_02b.pdf](https://www.climatebonds.net/files/reports/cbi_susdebtsum_h12021_02b.pdf)

<sup>7</sup> Page 12, Emerging Market Green Bonds Report 2020, IFC, World Bank Group

<sup>4</sup> G20 Green Finance Synthesis Report, September 2016.



Source: Emerging Market Green Bonds Report 2020.

### **International Initiatives on climate-related financial risk: G20 and FSB**

A number of initiatives are under way across the international fora, central banks, academics and private sector stakeholders to study climate-related financial risks. Critically, climate change related topics are being given an important place in the agenda of both the G20 and G7 for 2021, and preparations are underway for the upcoming COP26<sup>8</sup>.

The G20 for the first time adopted a joint final communiqué, which gives momentum to the common mission of the G20 countries to preserve global climate and ensure a clean and inclusive energy transition. They agreed that the crisis unleashed by the pandemic reinforced the importance of using science as a compass to guide the development of policies aimed at ensuring the common good. In this sense, it was important that - for the first time - the G20 recognised the fact that the impacts of climate

change will be much lower in the context of a global temperature rise not exceeding 1.5°C than in that of a 2°C increase, as affirmed in the "Global Warming of 1.5°C" IPCC Special Report". On the basis of this conclusion, the Members of the G20 decided to accelerate action to keep this 1.5°C limit on the rise of global temperatures within reach during the critical decade of the 2020s.

G20 has thus made climate action a key priority and an integral part of the recovery from the pandemic. Tackling climate change and the other challenges needed to bring economic development onto a sustainable path requires the involvement of the financial system and its alignment with the objectives of Agenda 2030 and the goals of the Paris Agreement<sup>9</sup>. In line with its vision, articulated around

<sup>8</sup> <https://ukcop26.org/>; The UK will host the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow during 31 October - 12 November 2021. The COP26 summit will bring parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change.

<sup>9</sup> The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP21 in Paris, on December 12, 2015 and came into force on November 4, 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects.

the pillars of People, Planet and Prosperity, the G20 re-established the Sustainable Finance Study Group (SFSG).

In parallel, the Financial Stability Board is working on ways to promote consistent, high-quality climate disclosures in line with the recommendations of the Task Force on Climate-related Financial Disclosures<sup>10</sup>. It is also continuing to work on data requirements and gaps that are crucial for assessing the financial stability risks posed by climate change. Concurrently, the International Financial Reporting Standards Foundation is moving ahead with a proposal to set up an international sustainability standards board (ISSB) to deliver the first consistent, single set of global norms for climate-related company disclosures.

### ***Role of central banks, BCBS and NGFS***

The fight against climate change is certainly a task for the global economy, society, and its institutions - including central banks. Greenhouse gas emissions (GHGs) do not stop at national borders, and international trade accounts for a significant share of global emissions. At the same time, we need to understand the roles played by all relevant actors and how they complement each other. Therefore, coordination at the global level would be essential. Central banks are engaged in many international fora that have made climate change a top priority, including the Central Banks and Supervisors Network for Greening of the Financial System (NGFS) and the Basel Committee on Banking Supervision's Task Force on Climate-related Financial Risks (TFCR).

The NGFS is a group of Central Banks and supervisors willing to share best practices and contribute to the development of environment and climate risk management in the financial sector. In order to learn from and contribute to the global

efforts towards enhancing the role of the financial system to manage risks and to mobilise capital for green and low-carbon investments, the Reserve Bank of India joined the Network for Greening the Financial System (NGFS) as a member central bank in April 2021. The Reserve Bank expects to benefit from the membership of NGFS by learning from member central banks and regulators and contributing to the global efforts on green finance and the broader context of environmentally sustainable development. It has, accordingly, begun participating in the workstreams of the NGFS and would be making use of the NGFS platform to equip its officers with the necessary skills and knowledge on climate-related risks.

The BCBS on the other hand has focused initial efforts on analytical research on the climate topic over the past few years and published two important analytical reports<sup>11</sup> on climate-related risk drivers and measurement methodologies. Taken together, the reports conclude that climate risk drivers can be captured in traditional financial risk categories. But additional work is needed to connect climate risk drivers to banks' exposures and to reliably estimate such risks. While a range of methodologies is currently in use or being developed, challenges remain in the estimation process, including data gaps, regional variations and uncertainty associated with the long-term nature and unpredictability of climate change. The ability to estimate and effectively mitigate climate-related financial risks will improve when we are able to iron out these challenges or could find an alternative approach. The TFCR is working to identify any potential gaps in the Basel Framework and develop appropriate measures to address them.

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<sup>10</sup> Task Force on Climate-Related Financial Disclosures | TCFD ([fsb-tcfd.org](http://fsb-tcfd.org))

<sup>11</sup> The Basel Committee on Banking Supervision published two analytical reports in April this year: Climate-related risk drivers and their transmission channels and Climate-related financial risks - measurement methodologies.

### **Sustainable Finance and role of RBI in a dynamic world**

The Reserve Bank of India's mission<sup>12</sup> statement encompasses universal access to financial services and a robust, dynamic and responsive financial intermediation infrastructure and recognises the importance of active and receptive financial intermediation. As the economy and financial system are not static, we need to appropriately respond to the changes around us. We also need to proactively consider new and emerging risks and opportunities while delivering monetary and financial stability in a time consistent manner.

The Reserve Bank had already advised banks in 2007 to put in place an appropriate action plan towards making a meaningful contribution to sustainable development. Slowly and steadily, the Reserve Bank has been incentivising bank lending towards greener industries and projects. For example, renewable energy projects have been included under Priority Sector Lending (PSL). In 2012, RBI included loans sanctioned by banks directly to individuals for setting up off-grid solar and other off-grid renewable energy solutions for households and in 2015, the PSL criteria was expanded to bank loans up to a limit of ₹ 15 crore to borrowers for purposes like solar based power generators, biomass-based power generators, windmills, micro-hydel plants and for non-conventional energy-based public utilities viz. street lighting systems, and remote village electrification. In 2020, the above limit for bank loans was doubled to ₹30 crore.

The Reserve Bank has also tried to spread awareness on the issue of green and sustainable finance by discussing the opportunities and challenges of green finance through its publications and other communication. For instance, in its Report on Trend

and Progress of Banking in India 2018-19, the Reserve Bank noted the risk of a climate change on financial assets and the need to accelerate the efforts for environment-friendly sustainable development.

### **Way forward**

We need to be conscious that addressing climate risk in the financial sector is our joint responsibility as it may affect the resilience of financial system in long-run. As the risks and opportunities and financial impact arising from climate change vary across jurisdictions, this poses unique considerations for emerging economy like India. The challenge before us is to mainstream green finance and think of ways to incorporate the environmental impact into commercial lending decisions while simultaneously balancing the needs of credit expansion, economic growth and social development.

Recently, we have set up a Sustainable Finance Group (SFG) within the Department of Regulation in the Reserve Bank which will be spearheading RBI's efforts and regulatory initiatives in the areas of sustainable finance and climate risk. Some of the initiatives which we are contemplating and discussing within the Reserve Bank are -

- i) Integrating climate-related risks into financial stability monitoring.
- ii) Building in-house capacity on assessment and monitoring of climate risk and generating awareness of climate-related risks among regulated entities.
- iii) Coordinating with other financial regulators to better understand the climate-related risks to the financial system and those related to a transition to a low carbon-economy.
- iv) Advising regulated entities to have a strategy to address climate change risks and appropriate governance structures to effectively manage them from a micro-prudential perspective.

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<sup>12</sup> Utkarsh23072019.PDF ([rbi.org.in](http://rbi.org.in))

- v) Exploring forward-looking tools like climate scenario analysis and stress testing for assessing climate-related risks.

### **Conclusion**

The global understanding of systemic impact of climate change on the economy and the financial system as also its resultant impact on financial stability is evolving and, accordingly, the responses of central banks and supervisors around the world have also been developing. The private and the public sector need to build on our early progress, both by recognising what we do know and urgently filling in the gaps around what we do not.

I would also like to emphasise that this is not about of a particular industry, a central bank or even a country. The impact of climate risk transcends across the national borders and continents. Let us be aware that even the countries which are not major contributors will also be equally impacted by these risks. We all are in it together. All of us should also recognise that our endeavour in dealing with climate change at this juncture cannot be approached as a marathon or as a sprint, it has to be a well-judged middle-distance run. Every stride counts on the way.

In closing, ladies and gentlemen, I wish you a day full of learning and insightful deliberations.

Thank you for your attention.

# ***Responsible Digital Innovation\****

***T Rabi Sankar***

Good morning.

Fintech, or technology that provides digital financial services is transforming the provision and delivery of financial services. At its most basic level digital technology enables speed – speed in processing information and speed in communication. Processing speed has reduced cost and time for transactions while communication speed has enhanced connectivity of systems expanding the reach of transactions. Taken together, digital technology is changing the way financial services are organised and financial products are delivered.

Digital innovation has, for example, enabled fast payments systems like Unified Payments Interface (UPI) and Immediate Payment Service (IMPS). Instantaneous communication and the ability to process large databases has enabled use of Aadhar for transaction authentication which in turn has made it possible to effect large scale Government transfers instantaneously and directly into the bank accounts of beneficiaries. eKYC has contributed to safety of on-line payments. P2P Lending or Crowdfunding platforms are gaining popularity in substituting for bank credit. Technology such as AI/ML has been used in such diverse areas as investment advice, fraud detection, HelpDesks etc. High-Frequency Trading has changed the way financial markets function.

Notwithstanding these benefits, it is important to appreciate the limitations of technology. To understand this, let us break down the essence of financial intermediation - between savers in an economy (basically households) and borrowers. The core part of this financial intermediation is done

by banks – through accepting deposits, extending credit and enabling payments. Since virtually all money (other than currency) is held as bank deposits, banks are at the centre of the payments system. This basic intermediation structure is overlaid by other institutions. Financial markets enable direct transfer of funds from savers to borrowers, bypassing banks to that extent. Entities like insurance companies, pension funds and asset management companies assume varied degrees of importance in financial markets as alternatives to intermediation by banks. In all these cases, funds eventually are held in a bank account.

Now that we understand how banks intermediate funds, we can identify the defining character of intermediation - banks bridge gaps in space and time between savers and borrowers. The spatial gap occurs when a saver and a borrower do not know each other, or are in different locations. The temporal gap occurs when the needs of the borrower and the lender arise at different points in time - borrower needs money after a month but the saver has money now. This later gap is bridged by banks through provision of liquidity services – a bank would take a deposit from the saver now and lend to the borrower after one month. Banks are uniquely placed to provide this service because they can create money and credit and thereby act as liquidity providers to the economy.

Similarly, in the field of payments, the area in finance where fintech is the most impactful, banks are uniquely placed since all digital payments transactions are transfer of money from one bank account to another. All other payment service providers facilitate transfer of money from one bank account to another, and in that sense play a supporting role.

Now it is easier to see why financial technology, while it can improve the efficiency of intermediation, cannot replace the core nature of financial intermediation. It can bridge the spatial gap but not

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\* Speech by Shri T Rabi Sankar, Deputy Governor, Reserve Bank of India – Tuesday, September 28, 2021 - Address to the Global Fintech Festival.

the temporal gap, in our terminology. For instance, one would still need a bank to warehouse the liquidity risk as no other entity can create credit and money. Put another way, any fintech entity that provides such liquidity services is effectively functioning as a bank and therefore should be subjected to the same legal/regulatory/supervisory regime that a bank is subjected to. This is one reason why in almost all countries, entities other than banks are not allowed to directly deal in deposit or deposit-like money.

This understanding of the limitations of technology prepares us better to manage the change that fintech is causing in banking and finance. It would also enable an effective approach to regulating fintech and the fast-mutating financial system.

The benefits of technology in improving efficiency and reach of the financial system, as well as the concomitant benefits for economic growth and financial inclusion call for a systematic non-disruptive adoption and encouragement of such technology in the financial system. Because FinTech can improve the efficiency of intermediation by driving down costs, sachetising of products and services, improving customer service and expanding the reach of financial services, it poses a challenge to the incumbents and forces them to adapt or change the way financial intermediation takes place. The ideal approach is for FinTech companies to be considered as enablers and partners by banks or other financial institutions. Competition for banks comes not from FinTech firms but from other banks which leverage FinTech better.

### ***Regulation of Fintech***

As fintech is transforming the financial landscape, the nature of regulation has to adjust. The sheer diversity in the functions performed by fintech firms, necessitates a widening of the regulatory perimeter. The approach to regulation also needs to adapt to the type of entity being regulated. While similar activities should attract uniform regulation in most cases, such activity-based regulation might be less effective than

entity-based regulation when one is dealing with financial activities by bigtech firms. Cybersecurity risks are likely to overshadow financial risks for all. Systemic risks, operational risks and risks affecting competition are of prime importance when dealing with large financial market infrastructure entities or bigtech. Countries need to overcome the legislative and regulatory deficits in dealing with concerns surrounding privacy, safety and monetisation of data. Regulations pertaining to data issues needs to adapt to a world where boundaries between financial and non-financial firms is getting increasingly blurred or geographical boundaries are no longer a constraint. (BIS Papers No 117 33)

It is virtually impossible for legislation to keep in step with the fast mutating fintech landscape. Until legislation catches up, regulation has to adapt to ensure that the financial system absorbs digital innovation in a non-disruptive manner. Regulation is sometimes defined as the process of slowing down change to give time for a system to adapt and evolve. The job of the regulator is not easy when a given financial service, performed by well-regulated financial firms, changes to include non-financial firms in a constantly reconfiguring financial value chain. Similarly, there are frictions for a non-financial firm to get used to financial regulation. The social benefits of a new technology or its impact on customer needs to be well understood by all stakeholders – regulators, existing financial firms as well as innovating fintech entities. Slowing down the process of change, which attracts the criticism of stifling innovation – is often the best way to ensure customer protection.

As digitisation is promoted by public policy, the industry is often characterised by the rise of dominating entities, whether bigtech or infrastructural entities. This raises competition and concentration risks. There is no clear answer to how such issues are to be resolved - limits on market share, for example, might open up the market to new players but it could

also stifle incentives to innovators. Regulators also need to improvise to address single-point-of-failure risks arising from market concentration, as much as they need to be alert to new points of failure arising from shifting value chains.

### ***The Indian Experience***

The approach to regulation taken by the Reserve Bank has been to create the environment where digital innovation can thrive. This involved, to begin with, taking the initiative to set up the basic infrastructural entities which provided the rails on which innovative products can run – Institute for Development and Research in Banking Technology (IDRBT) and National Payments Corporation of India (NPCI), to name two. Regulation sought actively to facilitate wider participation to include non-banks (e.g. mobile wallets issued by non-banks) and increase interoperability among different payment systems. Popular participation is created through making transactions simple and convenient, keeping costs low and minimising risks to customer (2FA or AFA, positive confirmation, user-friendly switch-on-switch-off facility on card-not-present or on-line transactions etc). Data storage requirements aim to promote data safety and privacy. Customer data protection from cybercrime is being ensured through minimizing vulnerable access points in the system through encouraging tokenisation.

As the digital payments landscape is maturing, RBI's regulatory attention is shifting to the next level of reforms. Upscaling of supporting infrastructure like Real-Time Gross Settlement (RTGS) and National Electronic Funds Transfer (NEFT) to be available round-the-clock not only improves choices for customers and businesses alike, they enhance the availability to non-banks and reduce settlement risk of satellite payments systems.

A customer protection framework with limited liability for customers, online dispute resolution,

digital ombudsman scheme, etc., are unique developmental initiatives. We have also benchmarked our payment systems with global best practices. These efforts have led to India reporting one of the lowest digital payment fraud rates across the globe.

To foster innovation, the Reserve Bank has come out with enabling framework for Regulatory Sandbox with the objective of fostering orderly and responsible innovation in financial services, promoting efficiency and bringing benefit to consumers. A Reserve Bank Innovation Hub (RBIH) has been set up to promote innovation across the financial sector by creating an enabling ecosystem where academics, technology, finance and regulators are brought together.

Rapid technological transformation of the financial sector has led to some peculiar challenges. One can witness a degree of friction in compliance, not characteristic of a typically well-regulated financial system. Regulatory initiatives, especially those intended for customer convenience or safety, often face opposition. Resistance to change is couched under the excuse of customer convenience. There was a strong push-back when the Reserve Bank introduced 2FA, about a decade back, although everyone cites it today as a unique success story in India's payment evolution. Nonetheless, one can see a persistent tendency to oppose customer-friendly reforms – e.g., the introduction of tokenisation to limit storage points of card credentials for customer safety, or to ensure 2FA for recurring transactions. We would only be able to reach a thriving and mature payments system if, overtime, all stakeholders attach due importance to long-term improvements over short-term gains and internalise mature practices like informed consent and transparency of data usage.

Notwithstanding these niggles, we have come a long way in promoting digital innovations. The JAM trinity has achieved levels of financial inclusion unimaginable for a country the size of India. Small

businesses and vendors have started adapting to digital payments. Yet digital penetration is limited largely to urban and metro areas. We need technological solutions to increase penetration to the vast sections of the population which is unbanked and lacks a smartphone. Promising options have been identified through the sandbox mechanism and efforts are on to mainstream those technologies.

While digital payments have become instantaneous within the country, the environment for cross-border payments has pretty much stagnated for decades. The factors cited are usually the following – need for exchange rates, time-zone differences, varying regulatory and legal requirements across different jurisdictions etc. Fintech can surely solve these frictions – platform-based solutions can make real-time price discovery possible even for retail sized transactions. Central Bank Digital Currency (CBDCs), if both countries have it, can make time zone differences disappear by replacing bank settlements with currency delivery which can take place even if the payment systems are closed.

Another area where fintech holds promise is to prevent digital frauds, which has become apparent

as the pace of digital penetration has outstripped development of awareness. *Digital Frauds*<sup>1</sup>: Incidents of digital frauds risen during the pandemic. Data from American consumer credit reporting agency TransUnion has found that fraudsters are ramping up their efforts in the financial services industry. When comparing the last four months of 2020 (Sep 1 – Dec 31) and the first four months of 2021 (Jan 1 – May 1), the company found that the share of suspected digital fraud attempts originating from India against financial services businesses had increased by 89 per cent. Globally, financial services fraud attempts increased 149 per cent. Clearly, both regulators and other stakeholders have to play their respective roles effectively to ensure that innovation in the fintech space continues to support India's economic growth.

To sum up, the fintech landscape can be described in Dickensian terms – we are in the best of times, with the promise of technological innovation in finance and hope of substantial efficiency gains, better customer experience and greater social welfare. But we also need to deal with threats of online frauds, compromise of customer credentials and data privacy and safety for the spring of hope not to turn into the winter of despair.

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<sup>1</sup> <https://www.transunion.in/blog/fraud-trends-Q2-2021>

## ARTICLES

State of the Economy

Should Financial Stability be a Monetary Policy Goal?  
Evidence from India

Return on Physical Capital: Insights from Firm Level Data

Renewable Energy – The Silent Revolution

The Low Yield Environment and Forex Reserves Management



## State of the Economy\*

*Amidst an accentuation of global risks, the Indian economy is picking up steam, although the recovery is uneven and trudging through soft patches. The step up in vaccination, slump in new cases/mortality rates and normalising mobility has rebuilt confidence. Domestic demand is gaining strength while aggregate supply conditions are recouping, powered by the robust performance of kharif agricultural production and revival in manufacturing and services. Softer than expected food prices have eased headline inflation into a closer alignment with the target.*

### Introduction

As the southwest monsoon begins its retreat, ushering in festivals of lights, sound and music, India gets set to resume exports of COVID-19 vaccines – grants and commercial deals<sup>1</sup> – to the rest of the

world. The world's biggest vaccine manufacturer, India exported 66 million doses to 95 countries before being forced to suspend them in early April 2021 to deal with the perilous waves of the pandemic raging domestically (Chart 1). Now she re-engages from a position of strength, having vaccinated more than two-thirds of the adult population (95 crore) with a single dose and fully vaccinated over a quarter. The current inoculation rate of over 60 lakhs per day needs to be stepped up to 1.17 crore doses daily to fully cover the adult population by the end of the year (Chart 2). Indian vaccine manufacturers have trebled their output from April levels while companies have set up capacity to produce up to 3 billion vaccine doses annually. Under the QUAD initiative<sup>2</sup> of producing at least 1 billion doses of vaccines for the Indo-Pacific region by the end of 2022, the vaccines will be produced in India with the US financing capacity expansion, Japan providing

**Chart 1: Made-in-India COVID19 vaccine Exports as on May 29, 2021 (In lakhs) - Top 10 Countries**

Sl. No	Country	Grant	Country	Commercial	Country	COVAX
1.	Bangladesh	33.0	Bangladesh	70	Nigeria	39.2
2.	Myanmar	17.0	Morocco	70	Ethiopia	21.8
3.	Nepal	11.0	UK	50	DR Congo	17.2
4.	Bhutan	5.5	Saudi Arabia	45	Kenya	10.2
5.	Sri Lanka	5.0	Brazil	40	Uganda	8.6
6.	Afghanistan	5.0	Myanmar	20	Sudan	8.3
7.	Maldives	2.0	Nepal	10	Uzbekistan	6.6
8.	Guatemala	2.0	South Africa	10	Angola	6.2
9.	Nicaragua	2.0	Mexico	8.7	Ghana	6.0
10.	Paraguay	2.0	Argentina	5.8	Ivory Coast	5.0
<b>Total of top 10 Countries</b>		<b>107</b>		<b>358</b>		<b>199</b>
<b>Total (Grant+Commercial+COVAX)</b>						<b>664</b>
<b>Share of top 10 Countries in Total (in per cent)</b>		<b>13%</b>		<b>50%</b>		<b>19%</b>

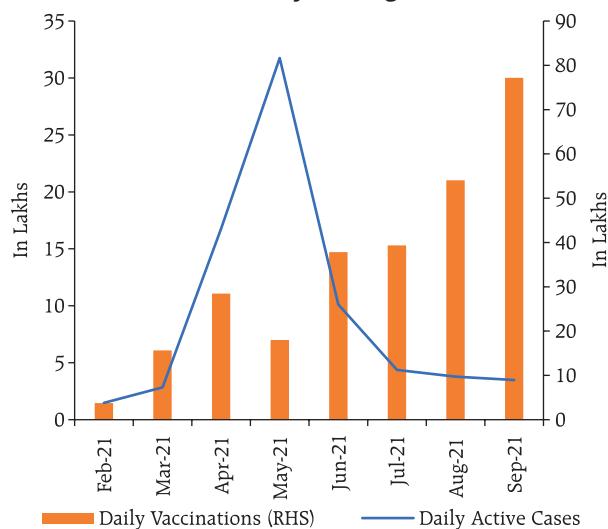
Source: Ministry of External Affairs, Government of India (29<sup>th</sup> May, 2021)

\* This article has been prepared by Michael Debabrata Patra, Sarthak Gulati, Shashidhar M. Lokare, Rajeev Jain, Vineet Kumar Srivastava, Barkha Gupta, Priyanka Sachdeva, Shahbaaz Khan, Abhinandan Borad, John V. Guria, Manu Sharma, Prashant Kumar, Rishabh Kumar, Satyarth Singh, Ipsita Padhi, Avnish Kumar, Sakshi Awasthy, Asish Thomas George, Deba Prasad Rath and Samir Ranjan Behera. Views expressed in this article are those of the authors and do not necessarily represent the views of the Reserve Bank of India.

<sup>1</sup> This includes shipments to COVAX, a facility supported by the World Health Organisation (WHO) aimed at delivering vaccines to developing countries.

<sup>2</sup> The Quadrilateral Security Dialogue (QUAD) is a strategic alliance between the US, India, Japan and Australia with a shared vision for a free and open Indo-Pacific and a rule-based maritime order.

**Chart 2: Covid Cases & Innoculations - Monthly Average**



Source: Ministry of Health and Family Welfare (MoH&FW).

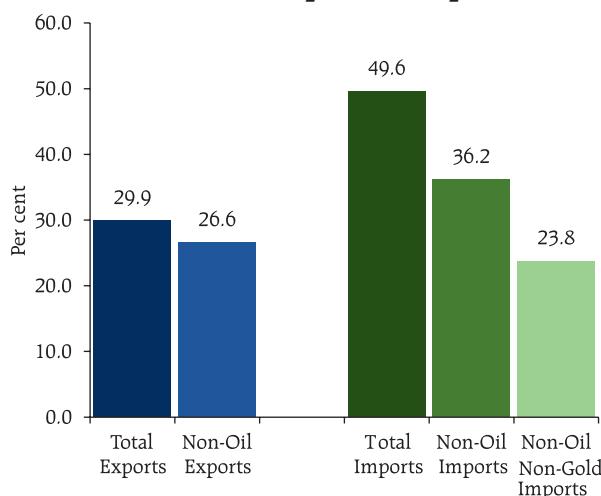
concessional loans to India and Australia giving last mile delivery support. India will finance 50 per cent of the first consignment of 1 million doses in October.

With the 7-day rolling average of infections in India plunging from the world's highest on May 9 to among the lowest by early October<sup>3</sup>, the green shoots of revival have spilled out of the high frequency indicators and on to the headline metrics in a recovery that is progressively solidifying. 2021-22 Kharif food grains production is slated to touch an all-time record. India has emerged as the world leader in exports of rice in 2021 – more than the combined exports of the next three exporters<sup>4</sup> – and the third largest rice exporter has started buying the grain from India. On October 12 the Ministry of Statistics and Program Implementation (MoSPI) indicated that industrial production had rebounded past its 2019 level, with all constituents sharing in the breakthrough in sequential improvement, including the laggard – manufacturing – but excluding consumer durables which are in a slower catch-up. Merchandise exports

<sup>3</sup> 3,91,280

<sup>4</sup> Thailand, Vietnam and Pakistan

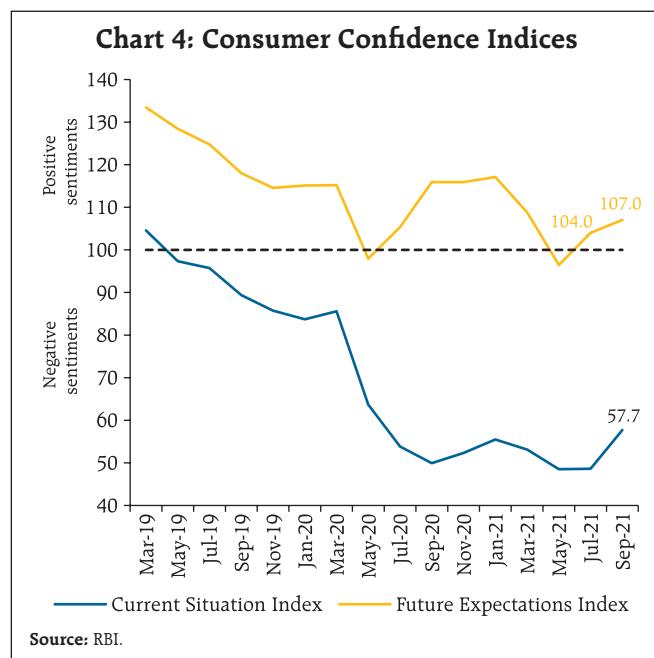
**Chart 3: India's Merchandise Trade-September 2021 (Growth over pre-COVID period)**



Source: Ministry of Commerce and Industry.

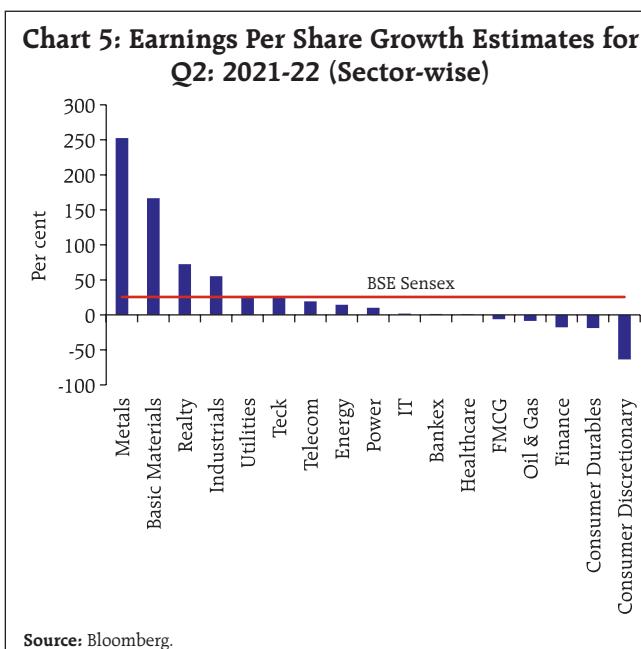
have maintained their turbo-charged trajectory right into September, up 29.9 per cent from their corresponding monthly level before the pandemic. In fact, the swing in the current account balance from a deficit to a surplus of 0.9 per cent of GDP in the first quarter of 2021-22 is driven by a shift in gears from weak domestic and external demand to the robust strength of export performance of both merchandise and software. Meanwhile domestic demand is gaining strength, pushing non-oil non-gold imports 23.8 per cent above their level in September 2019 (Chart 3). Based on these developments, the latest update of the 21-factor nowcast, i.e., the Economic Activity Index (EIA) indicates that real GDP grew by 9.6 per cent in July-September 2021 (Kumar, 2021).

How is India preparing for the recovery? From the suite of forward-looking surveys conducted by the Reserve Bank of India (RBI) at the time of the meetings of the monetary policy committee (MPC) and other independent survey-based information, it is evident that there is an uptick in consumer confidence about the current situation though it is



still in the contraction zone; however, expectations for the year ahead have broken through into positive territory in respect of the general economic situation; employment; households' income and spending (Chart 4). Although the latter's current perceptions indicate elevated inflation, their expectations over a year ahead have dipped 60 basis points. Housing sales are surging in the top seven cities.

Turning to the corporate sector, it enters the recovery with distinctly improved fundamentals. Its credit profile has strengthened, with ratings upgrades having outpaced downgrades in the first half of 2021-22, according to various rating agencies. BSE Sensex companies are expected to register 25 per cent plus growth in their earning per share (EPS) (Chart 5).<sup>5</sup> Sectors such as capital goods, metals and basic materials are expected to register sharp growth in their earnings. The renewable energy sector has gained impetus from two large acquisitions by an Indian conglomerate, setting the stage for consolidation in the solar industry, and a comprehensive, end-to-end

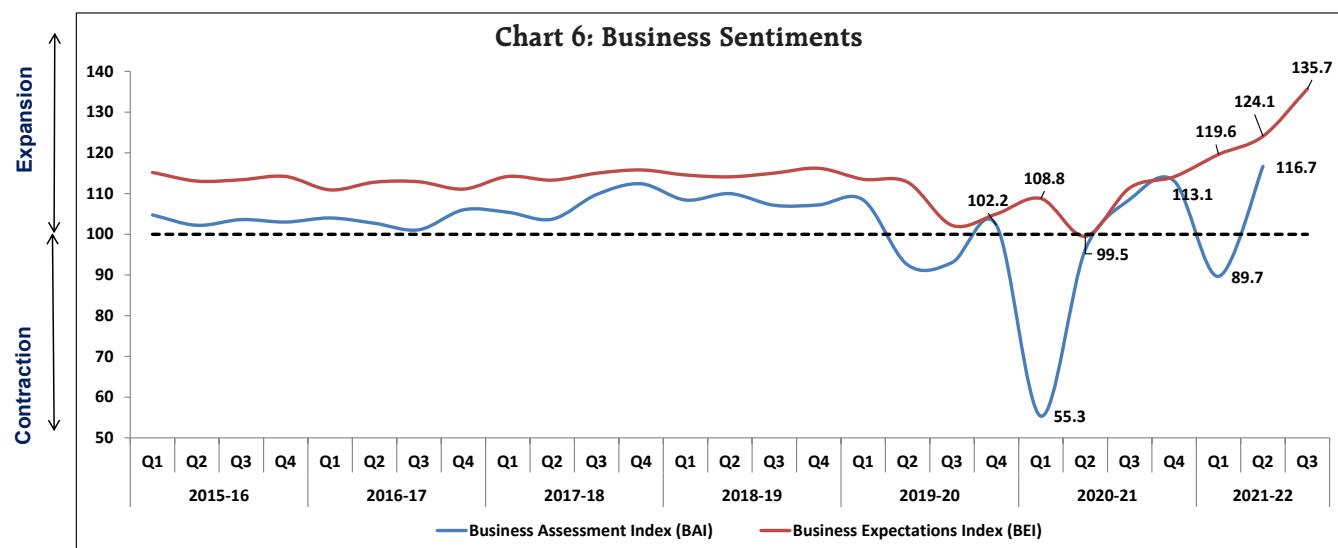


ecosystem of cost-efficient green energy for Indian consumers.

Our surveys also indicate that Government spending, strong order books and the improving pace of execution is lifting demand conditions across infrastructure-linked and services sectors, with downgrades confined to contact-intensive hospitality and aviation, power, real estate and textiles. Business conditions have recovered from second wave lows across firms in manufacturing, services and infrastructure in respect of demand parameters, financing conditions, demand for credit and profitability. Input cost pressures remain elevated across sectors, putting pressure on selling prices. Overall, business expectations for the second half of 2021-22 and the first quarter of 2022-23 are upbeat regarding capacity utilisation, production, order books and employment, with improvement expected in financing and credit conditions. Accordingly, the outlook on profit margins is bright (Chart 6).

Looking ahead from here, the main downside to the prospects for the Indian economy, abstracting from the pandemic, is the possibility of a sudden

<sup>5</sup> As of October 13, 2021.



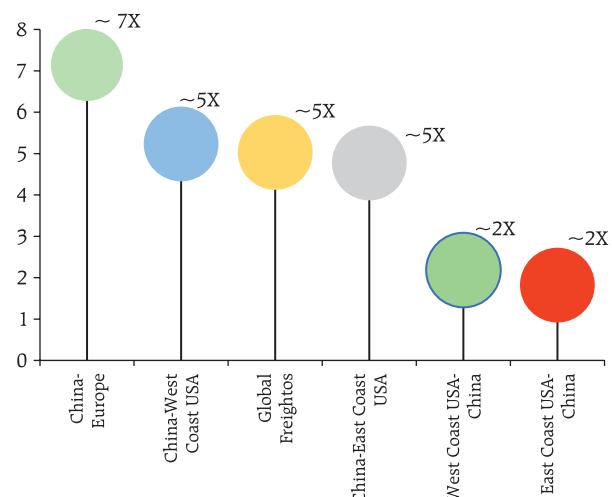
Source: RBI.

accentuation of global risks. First, there are now clearer indications that the momentum of global growth is slowing, especially in the countries that were to be its key drivers. Retail sales spending, global car sales, industrial production and world merchandise trade have moderated, with shortages widening in key sectors such as semi-conductors and shipping. Longer supplier delivery times are also holding back output in some industries. Calculations by the OECD indicate that global output in mid-2021 was 3.5 per cent lower than projected before the pandemic – this represents a shortfall of one year of global output growth in normal times. The drag from the pandemic and supply bottlenecks is not likely to ease in 2021, with worries that rising infections in Asia may have downstream consequences for the availability of critical supplies and hence for the pace of global growth. The highly uneven nature of the global recovery is also imposing very different policy challenges across countries.

Second, the pandemic has put world trade at risk. It has had an unprecedented impact on container shipping and global supply chains, forces that had kept globalisation going strong. Congestion at ports in the US, Europe and Asia have disrupted sailing schedules and equipment shortage, particularly in

exporting countries, and has created breaks in supply chains. Accumulated delays, pandemic protocols and poor schedule reliability are causing containers to remain in transit for longer, reducing the effective number of containers in active circulation, while armadas of vessels wait outside ports. The average cost of shipping a standard large container (a 40-foot-equivalent unit, or feu) is five times higher than a year ago (Chart 7). The average door-to-door shipping time for ocean freight has gone from 41 days a year

**Chart 7: Freight Rates Across Key Routes  
(Sep 2021 over Sep 2020)**



Sources: Reuters and Authors' calculations.

ago to 70 days<sup>6</sup>. At the same time, in the first seven months of 2021, cargo volumes between Asia and North America were up by 27 per cent compared with pre-pandemic levels<sup>7</sup>. The most optimistic estimate is that disruptions could take a year to unwind, while the worst case scenario is of a slowing down and reordering of world trade. With order books bulging, shipping firms may be preparing for more regionalised trade and for smaller vessels replacing mega-vessels that can only be handled at the biggest ports. With the persistence of high costs and delays, conversations about deglobalisation are starting (Chart 8).

Third, elevated inflation levels among developed and developing countries alike are widely regarded as transitory but the sense is that it is expected to stay for longer, at least into 2022. Broad-based increases in export prices in Asia are being mirrored in import prices elsewhere. The OECD estimates that higher commodity prices and global shipping costs are currently adding 1.5 percentage points to G20 CPI

inflation. In a scenario in which commodity prices rise further in the last quarter of 2021 and shipping costs remain elevated throughout 2022, G20 CPI inflation would be pushed up by 1.75 percentage points in the last quarter of 2021 and by more than 1 percentage point in 2022.

Fourth, Evergrande and recent trepidations relating to the US debt ceiling have shone light on an area of "social silence"<sup>8</sup> – the wider trend of inexorably rising indebtedness. According to the Institute of International Finance (IIF), total global debt hit a record level of US \$ 296 trillion or 353 per cent of world GDP at the end of the second quarter of 2021<sup>9</sup>. With the global economy three times leveraged, existential questions come to the fore: will high inflation be unleashed to reduce the debt? Will there be wide-spread debt forgiveness to avoid a social explosion? Will interest rates be forced to remain ultra low for longer, Or will there be mass defaults and financial crises?

**Chart 8: Spot Container - Freight Rates (percentage change over 2019)**



<sup>6</sup> Freightos

<sup>7</sup> The Economist, September 16, 2021

<sup>8</sup> Attributed to the French intellectual Pierre Bourdieu, it is the notion of an issue hidden in plain sight and ignored because it seems slow-moving, technical or vaguely familiar due to cultural biases (Tett, The Financial Times, September 21, 2021).

<sup>9</sup> Institute of International Finance (September 14, 2021). Global Debt Monitor: Reassessing the Pandemic Impact.

As pent-up demand collides with supply shortfalls, price pressures are inducing policy authorities to scale back stimuli. Yet, with the recent easing of the pace of the global recovery, there is a risk that fiscal and monetary policies may normalise just as activity loses momentum. The global economy may have to deal with new waves of the pandemic and withdrawal of stimulus simultaneously.

In this challenging environment, the RBI's monetary policy committee (MPC) maintained *status quo* on the policy rate and its accommodative stance in its 33<sup>rd</sup> meeting during October 6-8. With inflation easing for two months in a row, the MPC decided to keep prioritising the case for the recovery. The MPC's decision was consistent with expectations and was well received by market participants.

In keeping with this stance, the RBI committed to engage in a calibrated rebalancing of liquidity from passive absorptions under the fixed rate reverse repo to a more active modulation of liquidity through the main 14-day variable rate auctions and fine-tuning operations, including possibly 28 days tenor, as part of the graduated resumption of regular liquidity management operations. Apart from the higher rate of remuneration that these auctions entail, they also enable the dynamic discovery of the price of surplus liquidity or - from the point of view of banks - excess reserves. The RBI's steadfast commitment to accommodation is reflecting in it extending the window of on tap long term repos for small finance banks and in permitting banks to on-lend through NBFCs under the priority sector.

In its regulatory and developmental policies, the RBI intensified its focus on promoting digitalisation through the introduction of digital payments in offline mode, enhancement of the 'per transaction' limit under the Immediate Payment Service (IMPS) of

the National Payments Corporation of India (NPCI), and a framework for geo-tagging (capturing geo-coordinates such as latitude and longitude) of the physical payment acceptance infrastructure for wider access to digital payments.

The rest of the article is structured into four sections. Section II outlines recent global economic developments. An assessment of domestic macroeconomic conditions is presented in section III. Section IV reviews financial conditions in India and the last section concludes the article.

## **II. Global Developments**

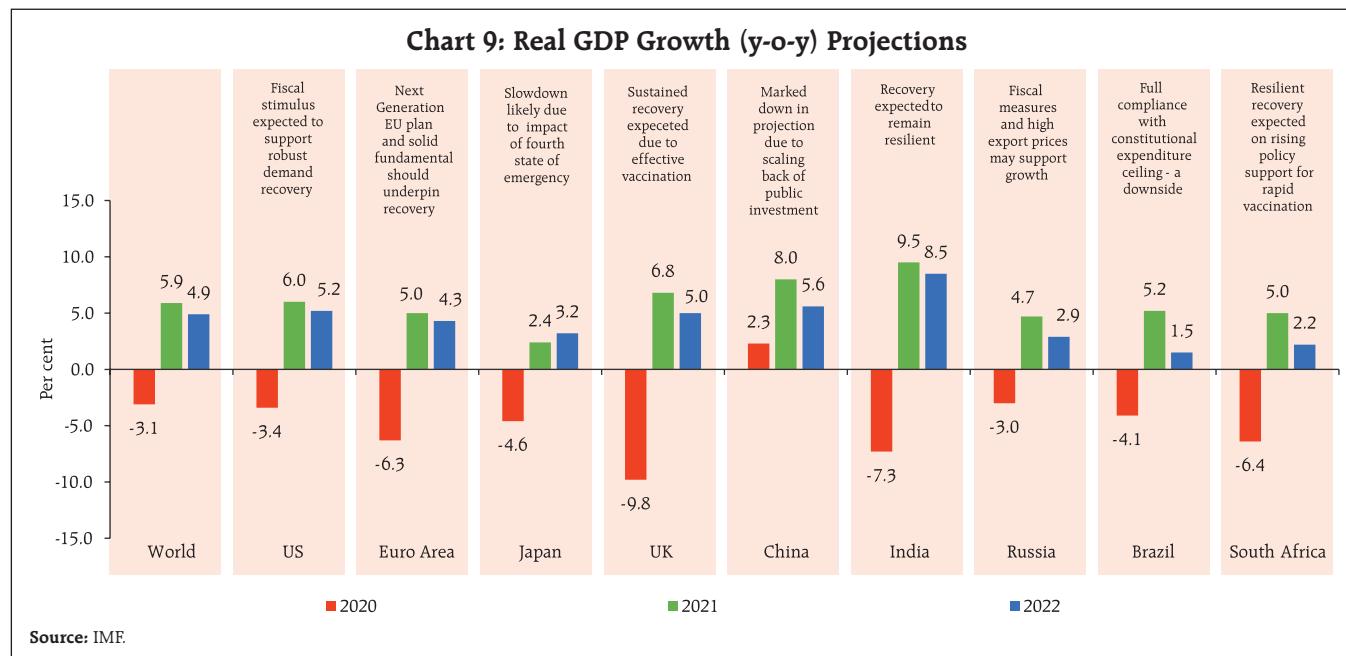
The global economic recovery is encountering outbreaks of the Delta variant, with supply shocks imposing restraints that are increasingly becoming binding. Moreover, with divergent output, employment and inflation outcomes across sectors and demographic groups, the recovery remains highly skewed, posing difficult policy choices.

In its World Economic Outlook released on October 12, 2021 the International Monetary Fund (IMF) has revised down the global growth forecast for 2021 by 0.1 percentage point to 5.9 per cent from its July projection (Chart 9)<sup>10</sup>. The revision reflects markdowns in projections for the advanced economy group – primarily due to supply disruptions – and Association of Southeast Asian Nations (ASEAN) countries on account of the worsening pandemic situation. Upward revisions in projections have been made for some commodity exporters, partially offsetting the downgrades. In the IMF's view, the impact of fault lines – unequal vaccine access; and policy support – are turning out to be more persistent than expected. On the other hand, the United Nations Conference on Trade and Development (UNCTAD)<sup>11</sup>

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<sup>10</sup> The projections for India's GDP growth are placed at 9.5 per cent in 2021-22 and 8.5 per cent in 2022-23.

<sup>11</sup> Trade and Development, 2021 released on September 15, 2021.



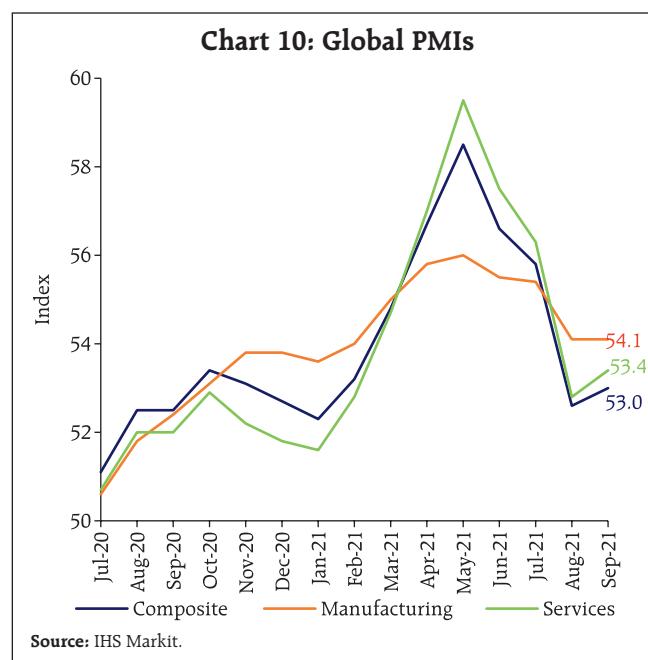
expects that the global economy is set for a strong rebound with a growth forecast of 5.3 per cent for 2021, *albeit* with considerable uncertainty clouding over the second half of the year.

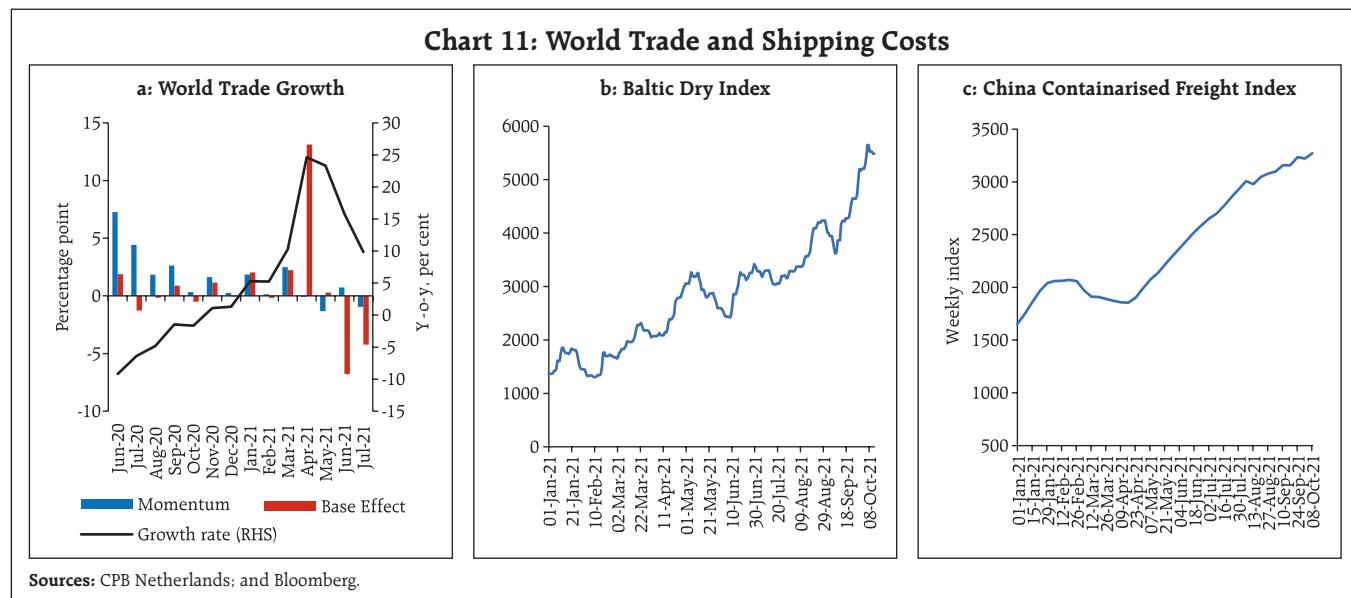
The global composite Purchasing Managers' Index (PMI) registered an upturn in September, driven primarily by strengthening performance of the Euro area, while output growth in other major economies, including the US and India, expanded at a slower pace than in August (Chart 10). The global services PMI marked some improvement, while the global manufacturing PMI remained unchanged in expansion zone, besieged by persistent supply chain constraints and raw material shortages.

U.S. GDP growth remained strong at 6.7 percent in the second quarter of 2021, sufficient to push output above its pre-pandemic level. It was led by consumer spending, benefiting from two rounds of stimulus. Non-residential fixed investment, government spending and exports also contributed to growth. The UK economy grew faster than anticipated in the second quarter at 5.5 per cent, aided by strong growth in household consumption and public spending. Similarly, Eurozone growth was revised up to 2.2

per cent in Q2, recording a solid rebound from two consecutive quarters of contraction.

In October, the World Trade Organization (WTO) scaled up its projection for world merchandise trade volume in 2021 to 10.8 per cent from 8.0 per cent made in March. In Q2, trade volume growth had accelerated to 22.0 per cent (y-o-y). Over the rest of the year, it is expected to slow down to 10.9 per



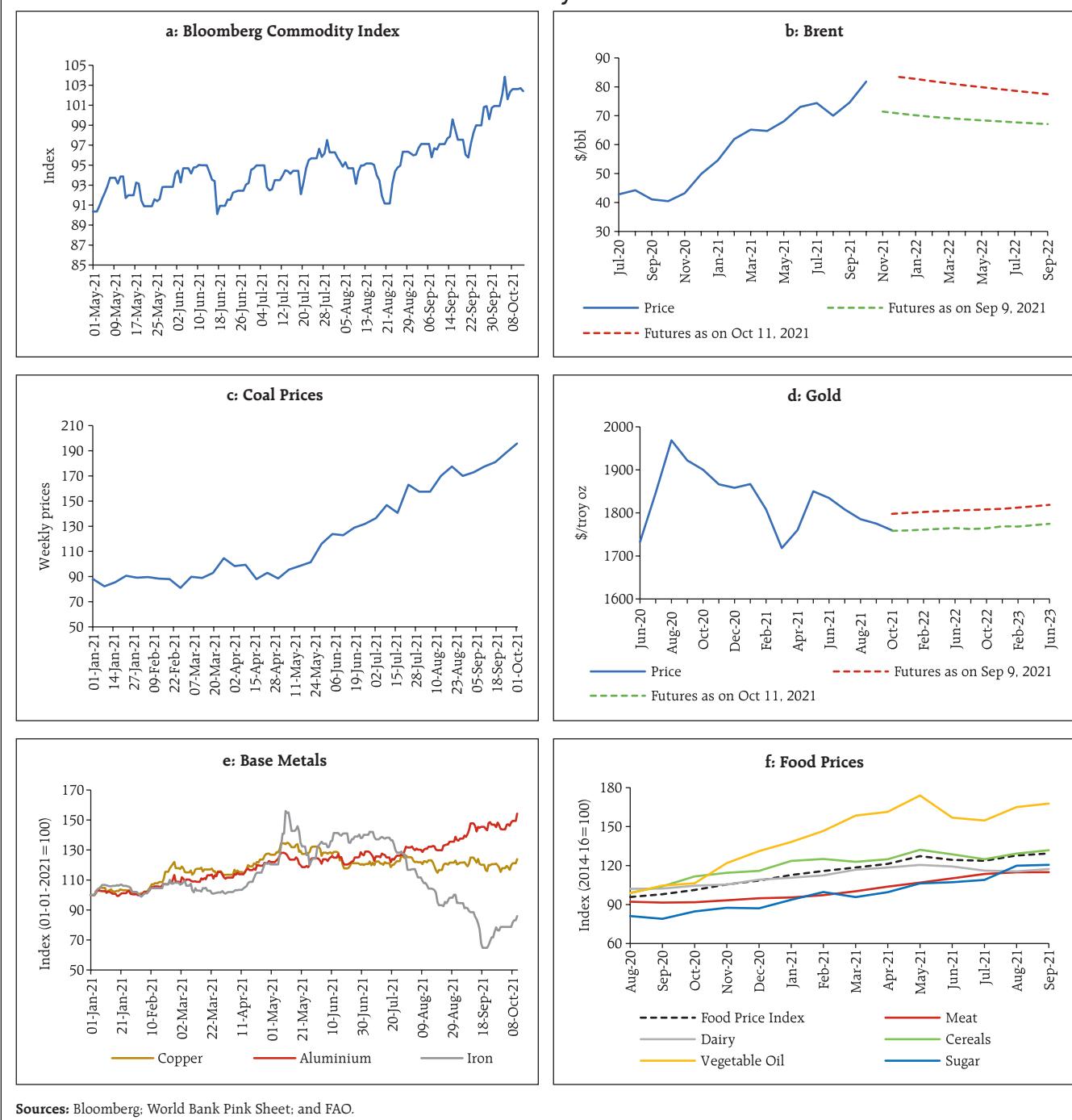


cent in Q3, followed by 6.6 per cent in Q4. Fresh COVID-19 outbreaks, strained global supply chains, semiconductor shortages and port congestion remain major headwinds to these upward revisions. Granular data for monthly merchandise trade show that y-o-y growth decelerated for three months up to July (Chart 11a). Shipping charges as measured by the Baltic Dry index continue to spiral, notching a new peak in early October (Chart 11b). Even the China (export) Containerised Freight Index (CCFI) continues to tread at elevated levels (Chart 11c).

Hard-hit sectors such as travel and leisure are likely to keep trade in services behind goods trade. The latest reading of the WTO's Services Trade Barometer at 102.5, released in September, suggests that the recovery in services trade is expected to remain slow paced and may stabilise at below pre-pandemic levels this year.

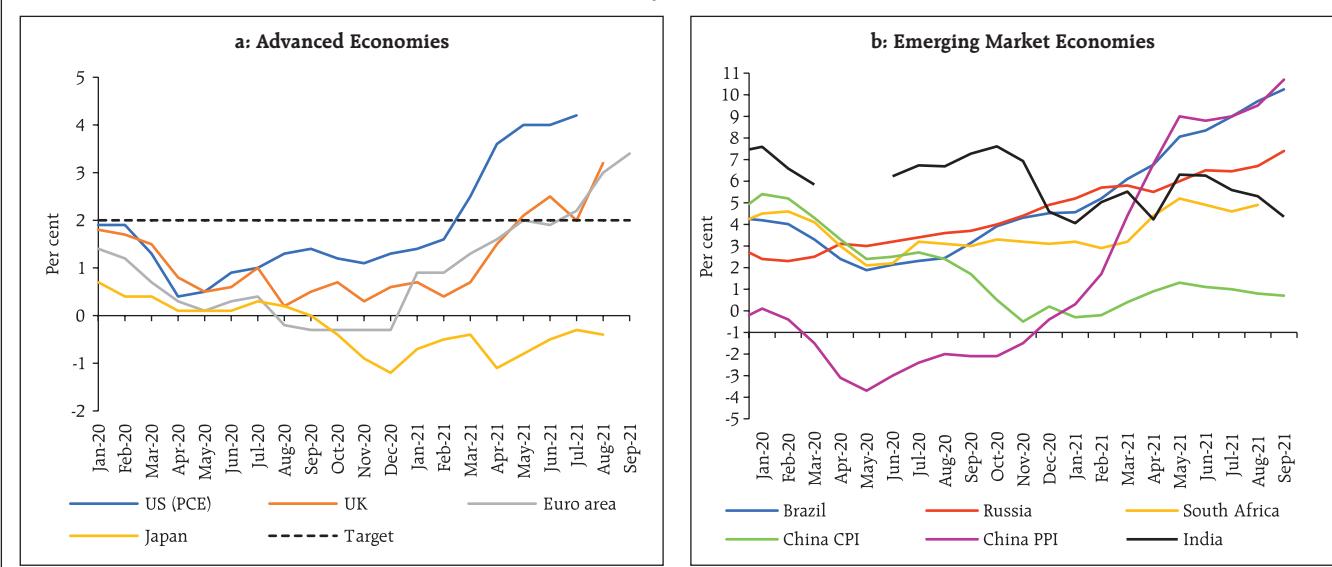
Mirroring widening supply-demand imbalances, commodity prices have rallied again from end-August, with the Bloomberg commodity price index soaring to a five-year high in early October (Chart 12a). Crude oil prices too have surged to a 3-year high in early October, crossing US\$ 80 per barrel on improved demand

prospects amidst persistent supply deficits. While the slowdown in the recovery in US output following disruptions from *Hurricane Ida*, and drawdown of inventories in China, have tightened supplies, the decision of OPEC plus in its meeting dated October 4, 2021 to maintain *status quo* on the pace of increase in crude oil supplies at levels agreed in the July meeting has added to the upside. At US\$ 83.90 on Oct 11, 2021, Brent crude clocked year to date gains of almost 64 per cent (Chart 13b). Natural gas and coal prices have also surged to record highs on a worsening supply crunch amidst increasing demand ahead of the winter (Chart 13c). Gold prices, however, eased for the most part of September, ending the month with a decline of 3.1 per cent over August as the strengthening US dollar and rising US treasury yields dimmed the sheen of the yellow metal (Chart 12d). Prices of most industrial metals remain at elevated levels, barring iron ore, which has plummeted by more than 50 per cent below the high of May, albeit with some gain in early October (Chart 12e). Food prices picked up further in September, with prices firming up across all sub-indices, barring meat, reflecting tightening export availabilities due to weather disruptions in the face of strong import demand (Chart 12f).

**Chart 12: Commodity and Food Prices**

Inflation remains a cause of concern across advanced and emerging market economies. In the US, inflation measured by the personal consumption expenditure (PCE) deflator, ruled at a 30-year high in August due to energy and food prices. In the Euro area

too, inflation scaled a 13-year high to 3.4 per cent in September, primarily driven by surging energy costs. In the UK as well, an unfavourable base effect due to last year's discounted restaurant prices under the government's 'Eat Out to Help Out' scheme and low

**Chart 13: Inflation**

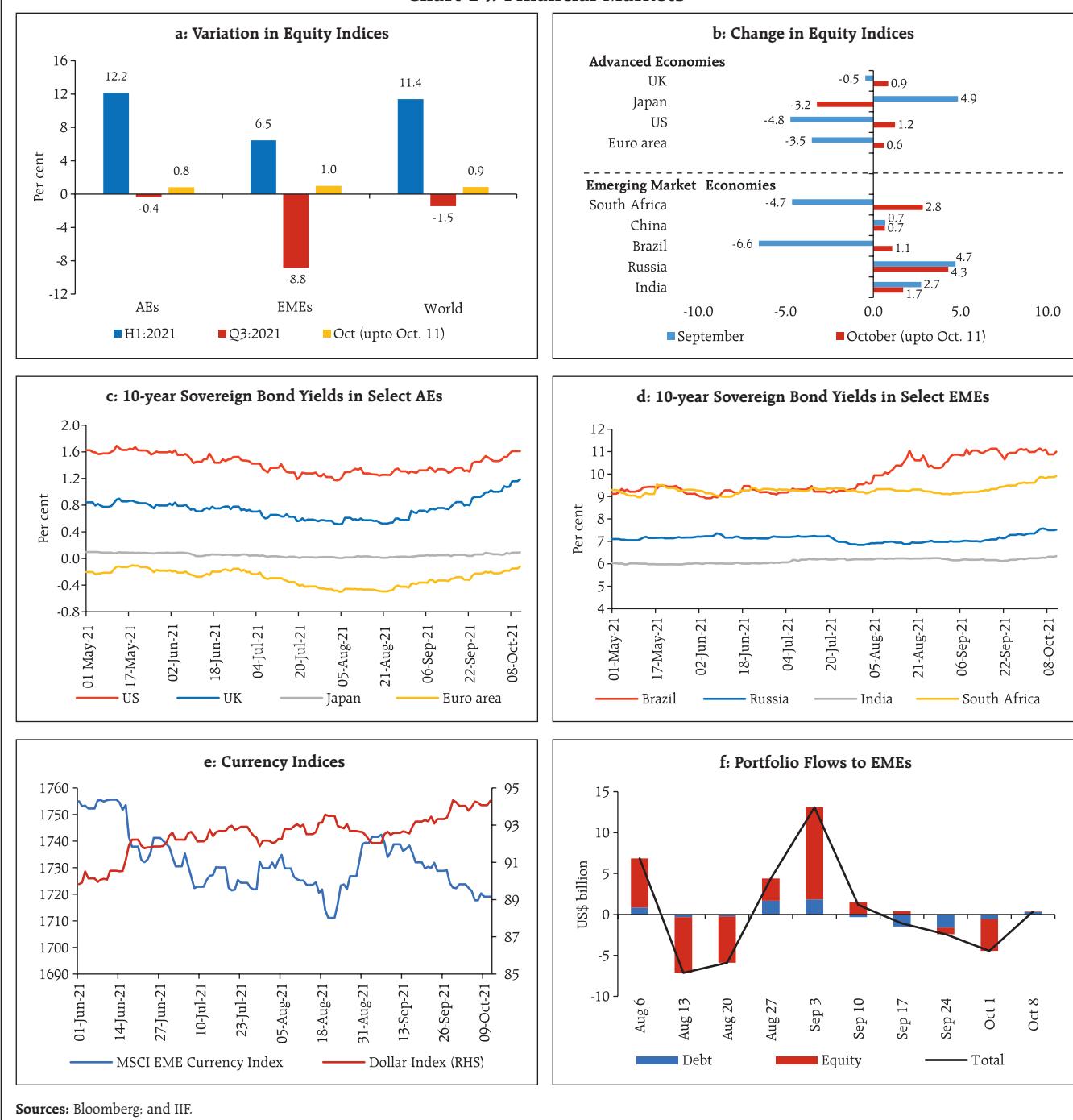
Source: Bloomberg.

value added tax pushed inflation to 3.2 per cent, its highest level since March 2012 (Chart 13a). Among major BRICS economies, inflation hardened to 7.4 per cent in Russia in September – its highest since June 2016 - while in Brazil, it shot up to 10.25 per cent for the same month, a level not seen since February 2016. In China, consumer price inflation has remained subdued, but producer prices have been scaling up on surging raw material costs amid supply disruptions (Chart 13b).

Global financial markets turned volatile from mid-September on rising concerns about inflationary pressures becoming persistent. Brewing crises in real estate and energy sectors and shifting monetary policy stances across major economies triggered a broad-based decline in global equity markets in September, erasing earlier gains and ending the quarter in the red (Chart 14a). The US S&P index fell from its recent peak in early September to register its worst monthly decline since March 2020, primarily due to sharp sell-offs in technology stocks. In October, however, the index pared some losses with the US Senate reaching an agreement to

extend the debt ceiling up to early December. Stock markets in other major AEs underwent a similar correction. EME stock markets, barring India and Russia, sold off and remain bearish in reaction to Evergrande's debt crisis, with the regulatory crackdown in China exacerbating the downtrend in September before exhibiting some reversal in early October (Chart 14b).

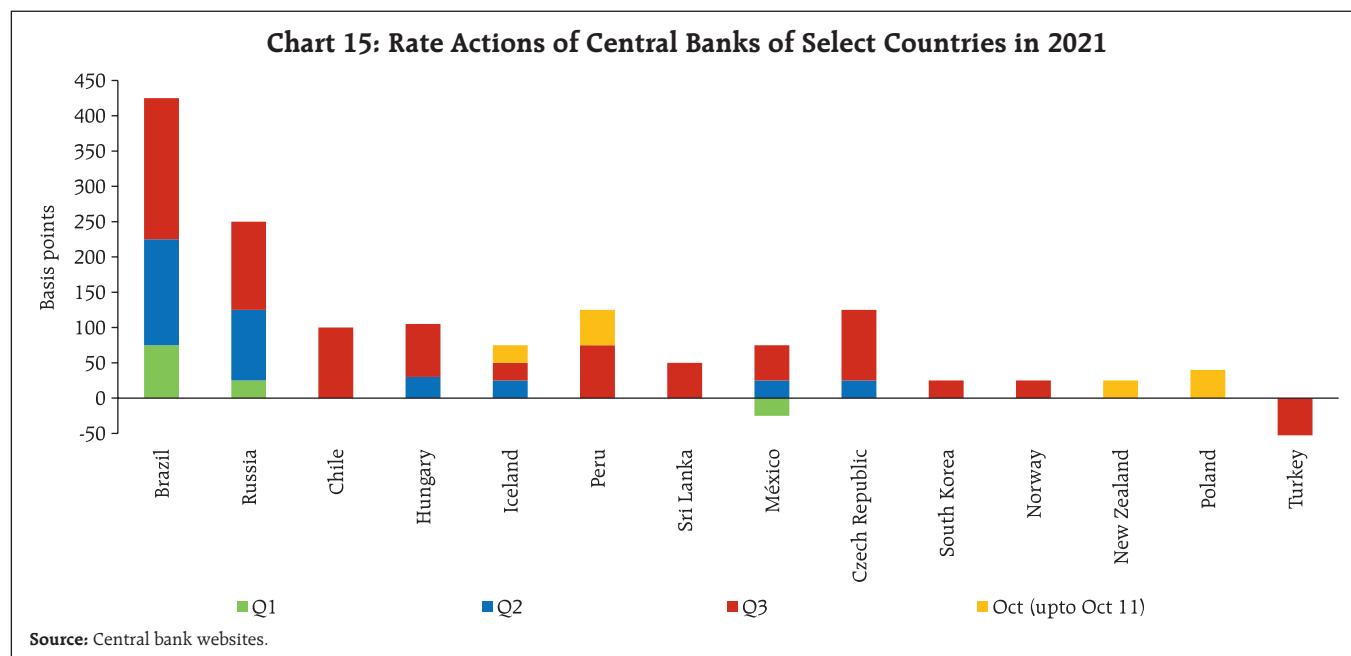
Bond yields have surged across the globe, driven down by large sell-offs. In the US, the 10-year treasury yield has risen sharply following the FOMC's statement on September 22, while bond yields in the UK have nearly doubled from end-August levels, moving above 1.0 per cent for the first time since May 2019 (Chart 14c). Tracking global cues, bond yields have been hardening across major EMEs, even for countries still holding on to an accommodative stance (Chart 14d). After a brief spell of correction towards end August, the US dollar has rallied through September and into October so far, mainly on safe haven flights (Chart 14e). Concomitantly, most EME currencies have depreciated, with retrenchment in capital flows amplifying the downswing (Chart 14f).

**Chart 14: Financial Markets**

Sources: Bloomberg; and IIF.

Reflecting these dissonant global macroeconomic and financial conditions, monetary policy actions and stances continue to diverge across countries, with more AE central banks joining their EME counterparts in either undertaking or indicating policy normalisation. In its September meeting,

the US Federal Reserve kept the target federal funds rate and the quantum of asset purchases unchanged, but indicated that if the progress towards maximum employment and inflation goals continued as expected, a moderation in the pace of asset purchases would be soon warranted. Two



other AE central banks – the Reserve Bank of New Zealand and Norges Bank - joined the league of AE central banks which have effected rate hike since the outbreak of the pandemic, taking the total count to five. Both the central banks raised their policy rates by 25 basis points (bps) each (Chart 15). Among other AEs, Iceland effected its third consecutive hike of 25 bps in October, while the Czech Republic resorted to its third hike at a higher magnitude of 75 bps. South Korea, on the other hand, maintained a pause in October after effecting its first hike in August.

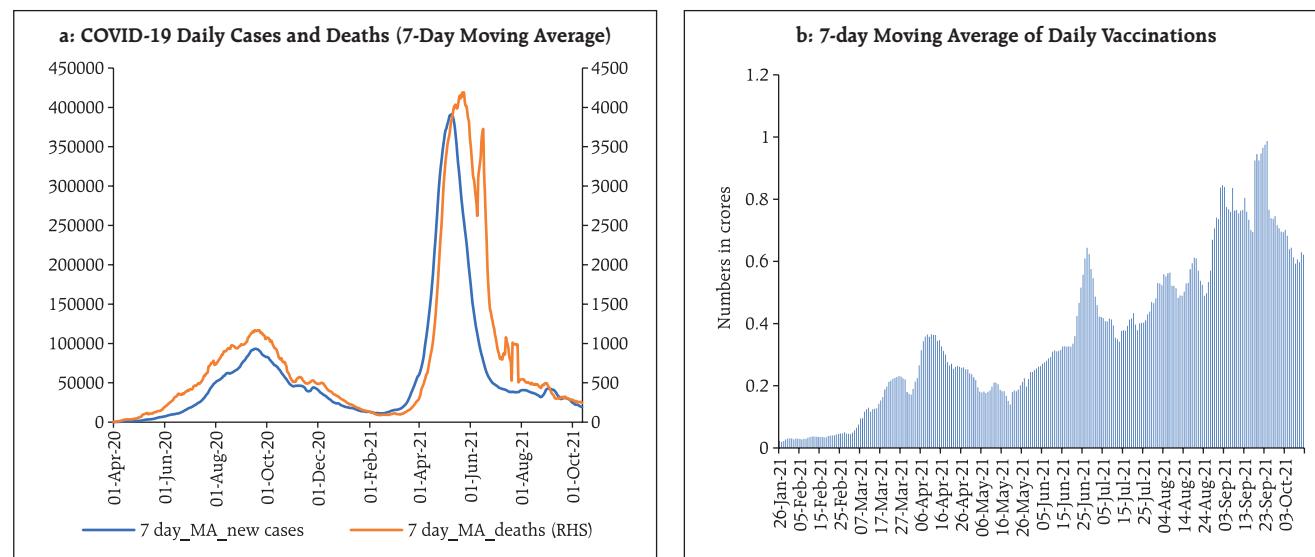
Among major EMEs, Brazil continued with policy tightening, raising its rate by another 100 bps in September and taking the total cumulative increase to 425 bps in 2021 so far. Hungary tempered the magnitude of increase to 15 bps in its fourth rate hike of 2021 in September, while Mexico and Peru effected their third consecutive rate hikes at a magnitude of 25 bps and 50 bps, respectively. Poland is the new addition among rate-hiking EMEs, effecting an increase of 40 bps in October for the first time since 2012. The Central Bank of Turkey, on the other hand, after maintaining a *status quo* since a hike of 200 bps in March 2021, slashed rates by 100 bps in September,

attributing high inflation to transitory factors and dampening credit and domestic demand to earlier monetary tightening.

Overall, the near-term outlook remains clouded, with renewed waves of infections keeping the global recovery uneven and fragile. With mounting inflation concerns leading to faster policy normalisation than envisaged earlier, risks to recovery as also financial stability have increased, especially in EMEs.

### III. Domestic Developments

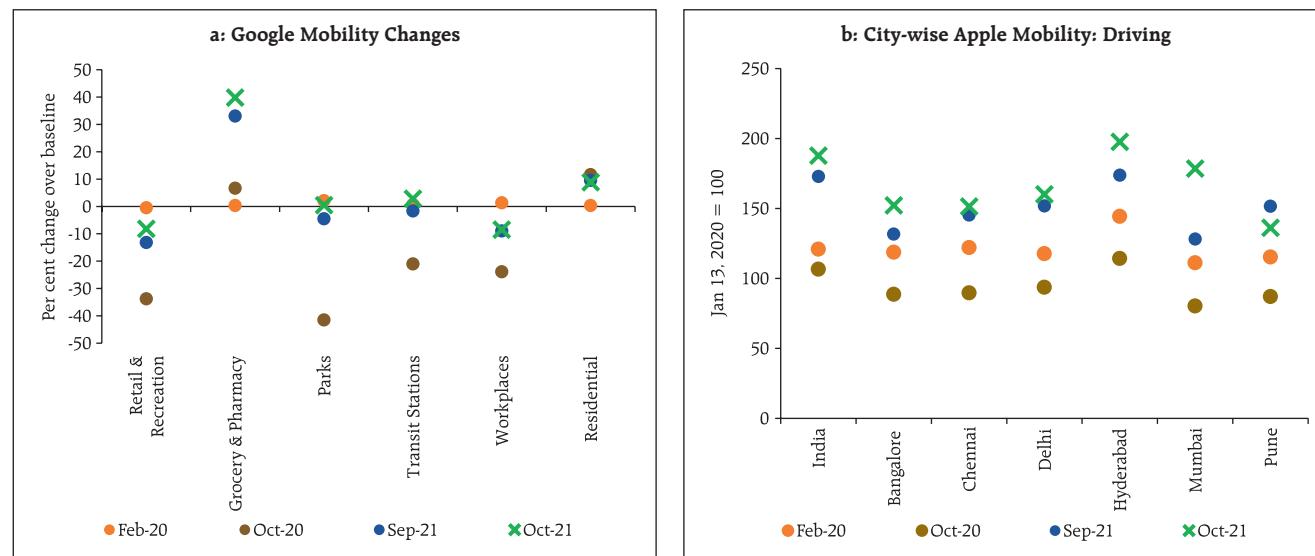
With signs of the second wave abating and mobility and activity returning towards normalcy, the Indian economy is picking up steam, although the recovery is uneven and trudging through soft patches. Even though a few high frequency indicators of economic activity have slowed down in September and early October, the step up in vaccination and slump in new cases and mortality rates has rebuilt confidence. The 7-day moving average of daily new cases plunged further during this period to an ebb of 18,060 on October 14, 2021 from 35,464 on September 12, 2021. Active cases comprise just 0.61 per cent of total infections, the lowest since March 2020, while

**Chart 16: Covid-19 cases and Vaccinations**

Source: Ministry of Health and Family Welfare (MoH&FW).

the national COVID-19 recovery rate has risen to 98.07 per cent, the highest since the same reference date<sup>12</sup>. The pace of vaccination has been stepped up, with daily vaccinations surpassing the record 1-crore mark multiple times. The total number of doses administered has crossed 96 crore as on October 11, 2021 (Chart 16a and 16b).

With the festive season setting in and offices opening up, the Google and Apple mobility indices have recorded growing footfalls in September–October. The Google mobility index for groceries and pharmacies surged beyond pre-pandemic levels, as did the Apple mobility index, led by the cities of Hyderabad and Mumbai (Chart 17a and 17b).

**Chart 17: Impact of Second Wave of COVID-19 on Economic Activity**

Sources: Google; CMIE; and CEIC.

<sup>12</sup> Press Information Bureau, October 14.

### Aggregate Demand

With mobility on the rise, E-way bill collections in September remained buoyant sequentially, staying well above the pre-pandemic level of February 2020 in respect of both intra-state and inter-state bills (Chart 18a). Toll collections jumped by 75.9 per cent y-o-y (Chart 18b).

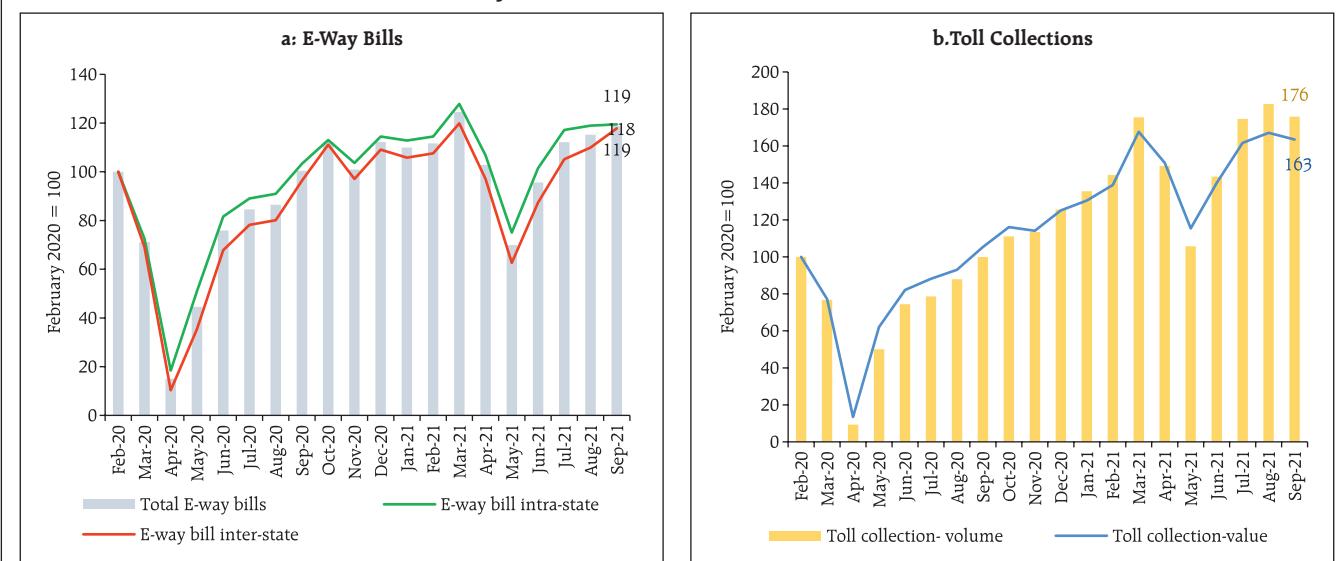
Fuel consumption rebounded in September 2021, with the consumption of petrol sustaining beyond pre-pandemic levels and aviation turbine fuel (ATF) logging sequential improvement, even as diesel consumption eased marginally (Chart 19a).

Automobile wholesales continued to surge although shortages of semiconductor chips impacted sales of passenger vehicles. Retail sales of motor vehicles moderated with festival season discounts around the corner. The decline in registrations was led by non-transport vehicles; however, the demand

for transport vehicles improved y-o-y as well as sequentially (Chart 19c). As regards rural demand, tractor sales registered a m-o-m growth of 72.1 per cent in September (14.8 per cent decline y-o-y) (Chart 19d).

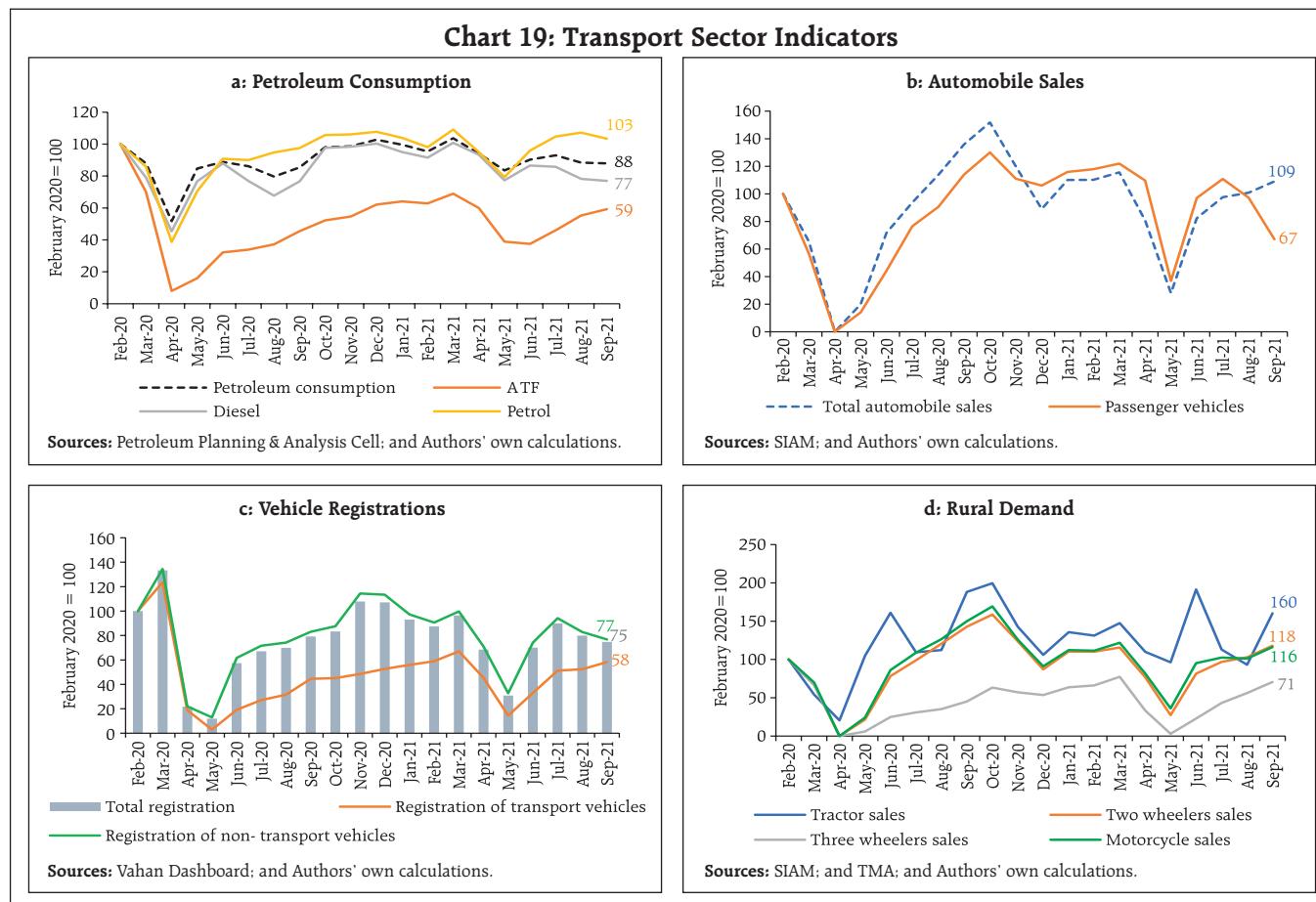
Industrial and commercial demand has driven up electricity generation readings above their pre-pandemic levels (Chart 20). The production of coal, however, has not been able to keep pace during April–September 2021, the demand for power increased by 13.0 per cent y-o-y while the production of coal by Coal India Limited (with over 80 per cent share in domestic production) grew by 5.8 per cent. At the same time, the surge in international prices of coal has dampened imports, increasing dependence on domestic production. Production bottlenecks in view of heavy rains in September have added to the stress on coal stocks with power plants.<sup>13</sup> This has caused spot prices of electricity to spiral on the India Energy

**Chart 18: E-way Bills and Toll Collections (Feb 2020=100)**



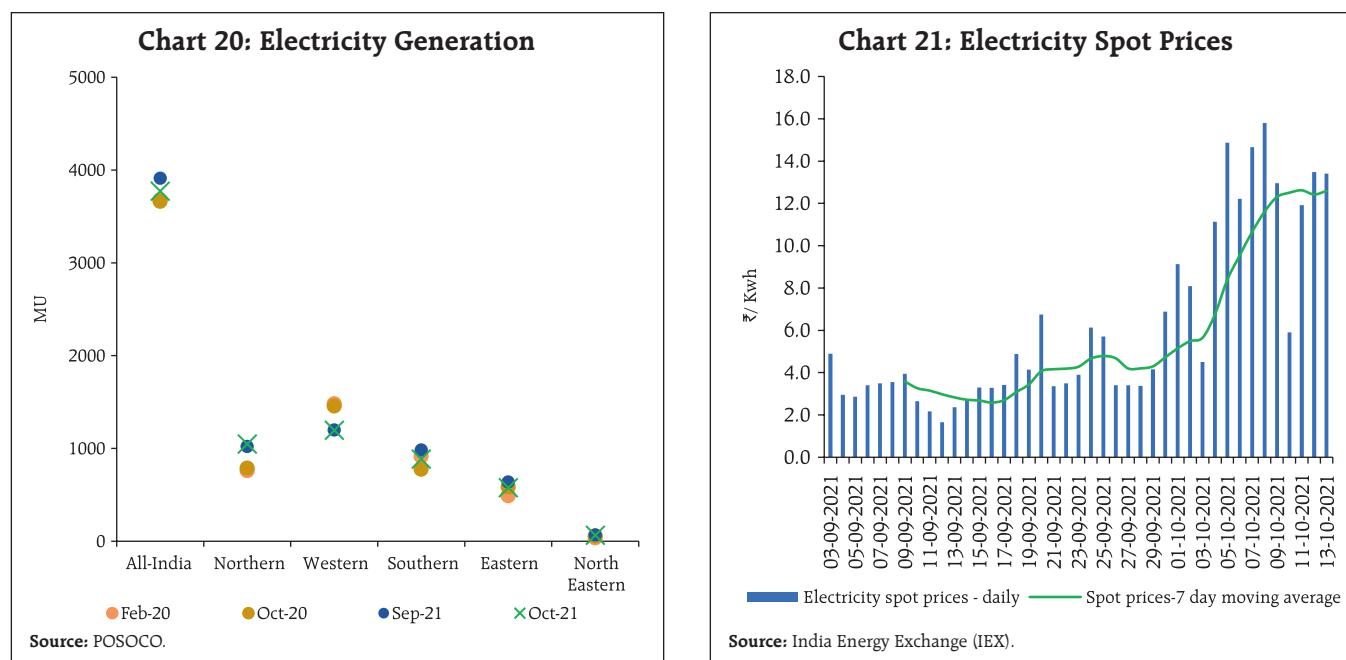
Sources: GSTN; Reserve Bank of India; and Authors' own calculations.

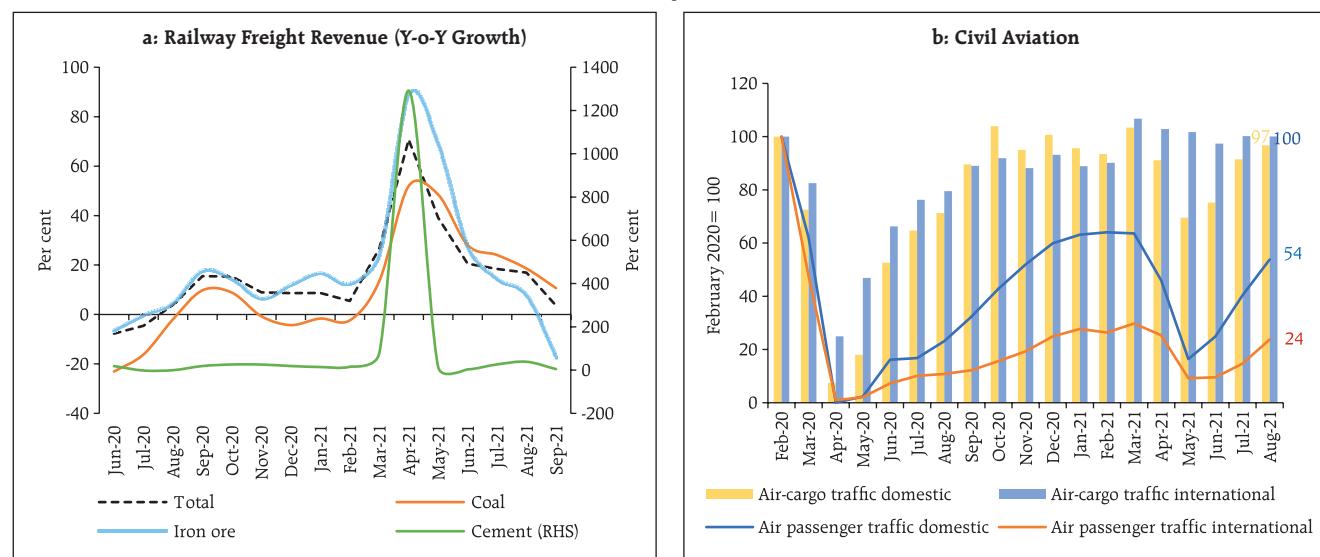
<sup>13</sup> The peak shortage of electricity, which stood at an average at 1917.6 MW and 417.9 MW during September 2019 and 2020 respectively, increased from mid-September 2021 and reached 11,626 MW on October 7, 2021.



Exchange (IEX) (Chart 21). According to the Ministry of Power's Press Release of October 5, 2021, dispatches

from coal mines have picked up on October 4, 2021 and are expected to increase further.



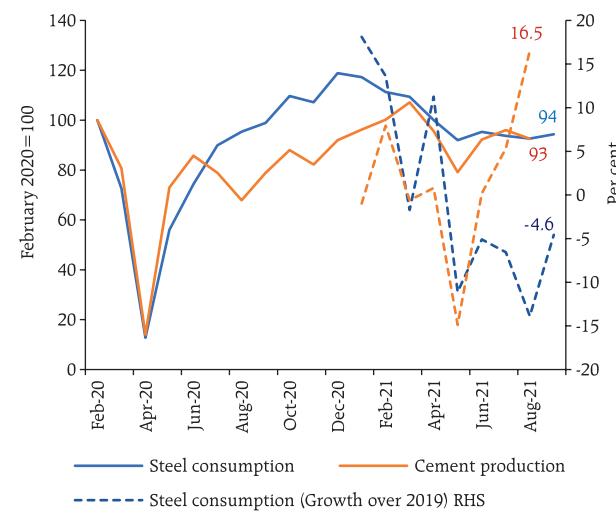
**Chart 22: Railway and Air Traffic**

Sources: Airport Authority of India; and Rail Drishti.

Turning to the services sector, railways freight traffic remained resilient, marking an increase of 3.6 per cent in September over its level a year ago and 19.7 per cent over its level in September 2019 (Chart 22). Normalised to February 2020 levels, high frequency indicators of the construction sector - steel consumption and cement production - trailed below the baseline. Over the corresponding pre-pandemic month in 2019, however, cement production posted a robust growth (Chart 23).

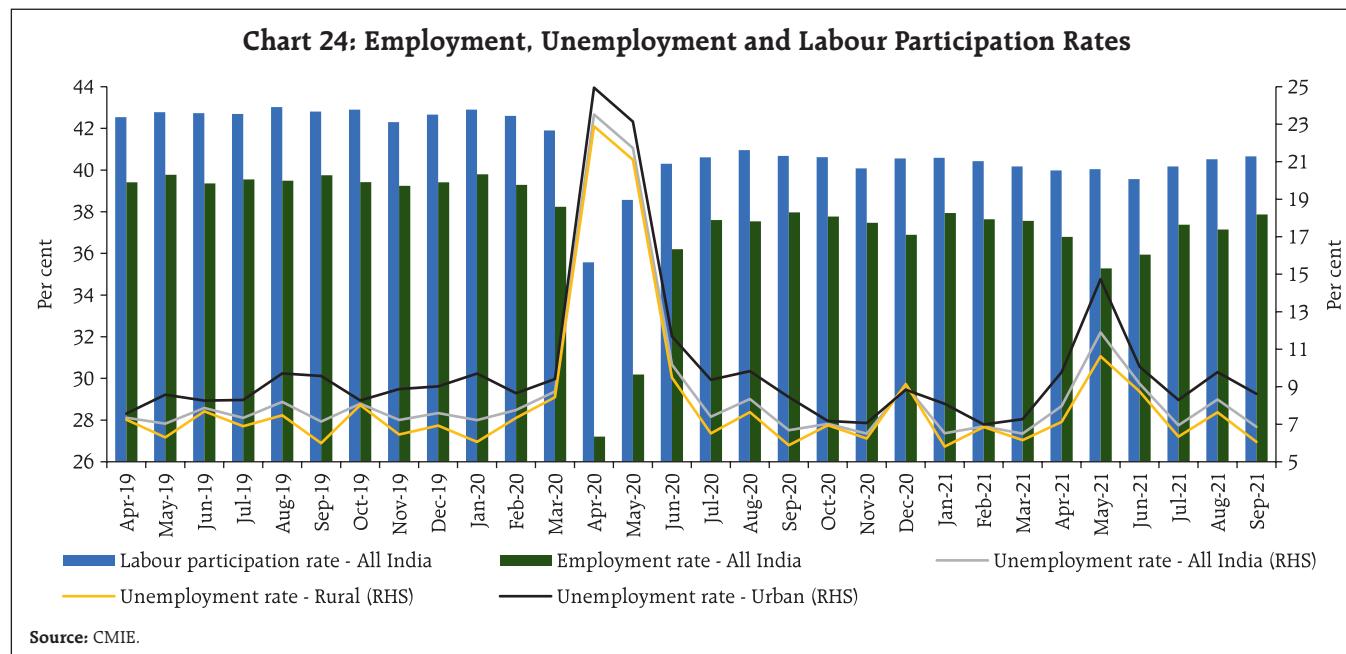
In the aviation sector, both passenger and cargo traffic is picking up, with the cargo segment outperforming passenger business. In September and the first half of October, domestic air travel accelerated further on the back of festive season demand, with seating capacity increasing to 85 per cent from 72.5 per cent in August. Daily domestic airport footfalls<sup>14</sup> averaged 4.6 lakhs/ day in September, an increase by 8.5 per cent over August and 5.3 lakhs/ day in October (up to October 10). International airport footfalls improved by 37.3 per cent m-o-m in September and 23.4 per cent m-o-m in October.

<sup>14</sup> Includes both departing and arriving passengers.

**Chart 23: Construction Sector Indicators**

Sources: Joint Plant Committee; and Office of the Economic Advisor, Ministry of Commerce and Industry.

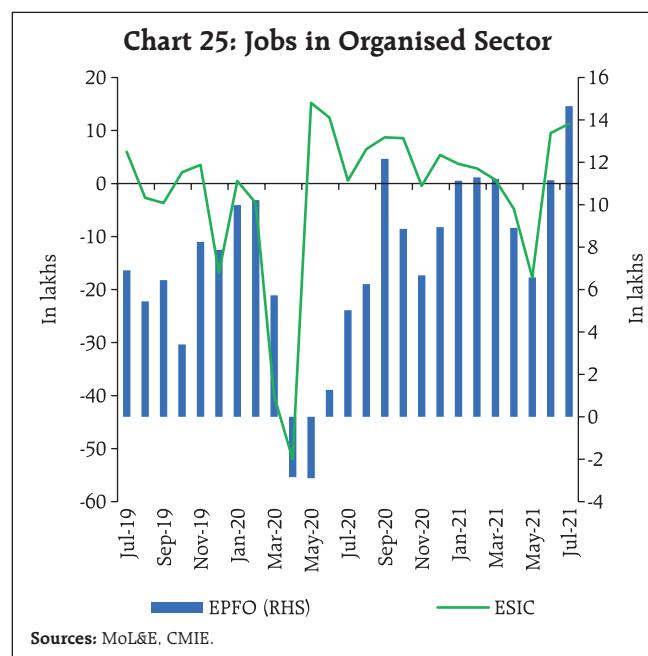
Sales of fast-moving consumer goods (FMCG) intensified in the first three weeks of September in the run-up to the festive season, led by discretionary products. Sales of commodities or staples have also seen a consistent rise. On-the-go products such as beverages and single serve packages that depend mainly on increased mobility also recorded a spurt.



Digitisation is empowering *kiranas* and opening up new growth vistas for the FMCG sector.<sup>15,16</sup>

The household survey of the Centre for Monitoring Indian Economy (CMIE) indicated that the labour participation rate improved to 40.66 per cent in September, the highest in the past 12 months. As a result, the employment rate (worker population ratio) rose to 37.87 per cent, its highest in the last eight months. The unemployment rate slumped to 6.86 per cent in September from 8.32 per cent a month ago (Chart 24).

Organised sector labour market data, as captured by the Employees' Provident Fund Organisation (EPFO) and the Employees' State Insurance Corporation (ESIC), show that the impact of the second wave on employment has been relatively muted (Chart 25). Labour market recovery is likely to be almost

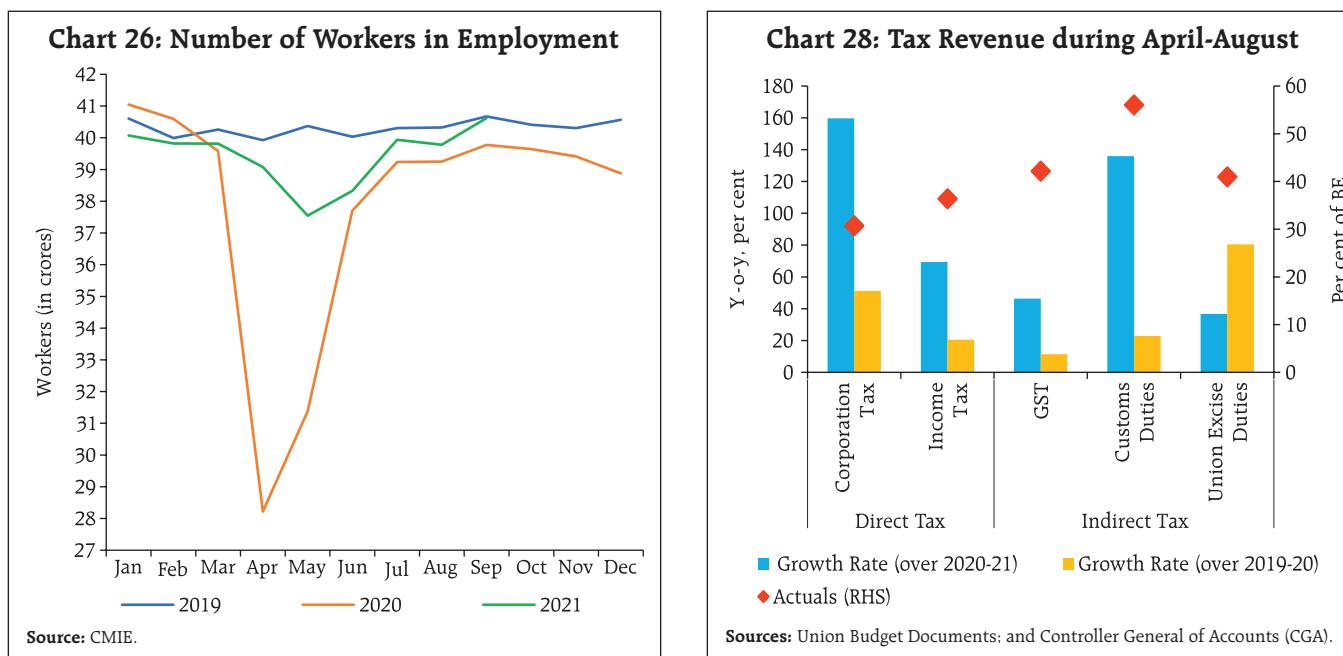


complete with the number of workers employed in September 2021 nearing levels seen in September 2019 (Chart 26).

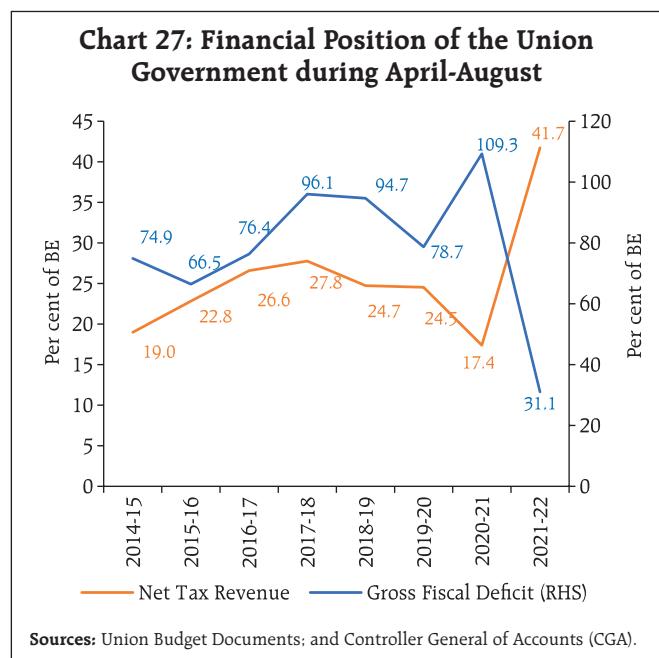
During April-August, the fiscal deficit of the Centre was contained at 31.1 per cent of budget

<sup>15</sup> Mint, September 24, 2021.

<sup>16</sup> Resilience in the FMCG & Retail Sector, Deloitte-FICCI, September 23, 2021.



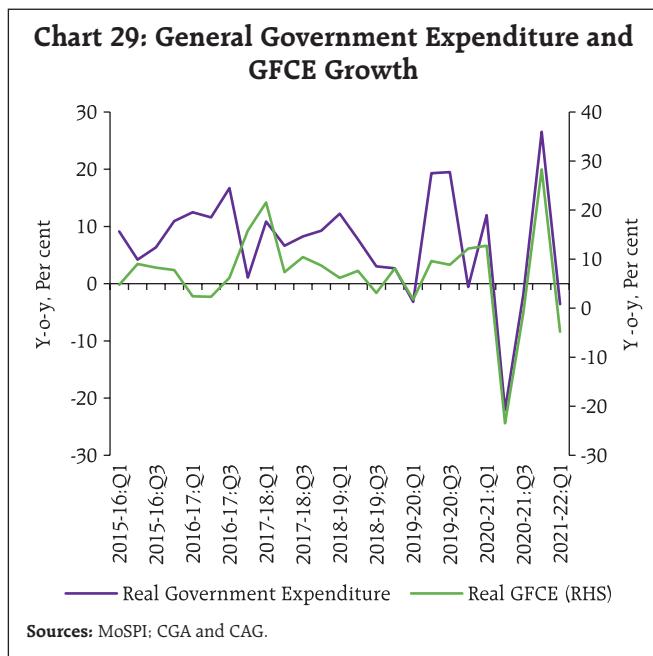
estimates (BE), the lowest in 18 years (Chart 27). Direct tax collections surged by 101.1 per cent over 2020-21 levels. Indirect taxes grew by 52.4 per cent during the period on the same basis (Chart 28).<sup>17</sup>



<sup>17</sup> Over 2019-20, direct and indirect taxes recorded an increase of 34.1 per cent and 27.1 per cent, respectively.

Capital expenditure grew by 27.8 per cent, led by the Ministry of Road Transport and Highways, which has exhausted 67.0 per cent of its budgeted capital expenditure for 2021-22. In contrast, revenue expenditure contracted. During September-March 2021-22, revenue expenditure less of interest payments and major subsidies (RE-IP-S) of Centre is expected to grow by 13.8 per cent to meet budgeted levels. States are also likely to step up their expenditure as their revenue positions improve on the back of the receding threat of a third wave of infections. For 24 states, revenue expenditure less interest payments has to grow by 25.6 per cent through August-March 2021-22 to meet budgeted levels. For general government (Centre and states), this works out to a growth of 22.4 per cent during August-March, which is higher than in the preceding three years (Chart 29).

In September, total GST collections (Centre plus states) stood at ₹1.17 lakh crore - a growth of 22.5 per cent y-o-y (Chart 30). Advance tax collections and provisional estimates of direct tax revenues for the Centre as on September 22, 2021 also indicate sustained buoyancy in tax revenues (Table 1).



During H1:2021-22, India's merchandise exports were in sight of the half-way mark of the annual export target of US\$ 400 billion set for 2021-22. Merchandise exports remained above the US\$30 billion mark for the seventh straight month in September 2021, driven by buoyant external demand for engineering goods, petroleum products and chemicals (Chart 31a and b). Export growth remained broad-based as 9 major

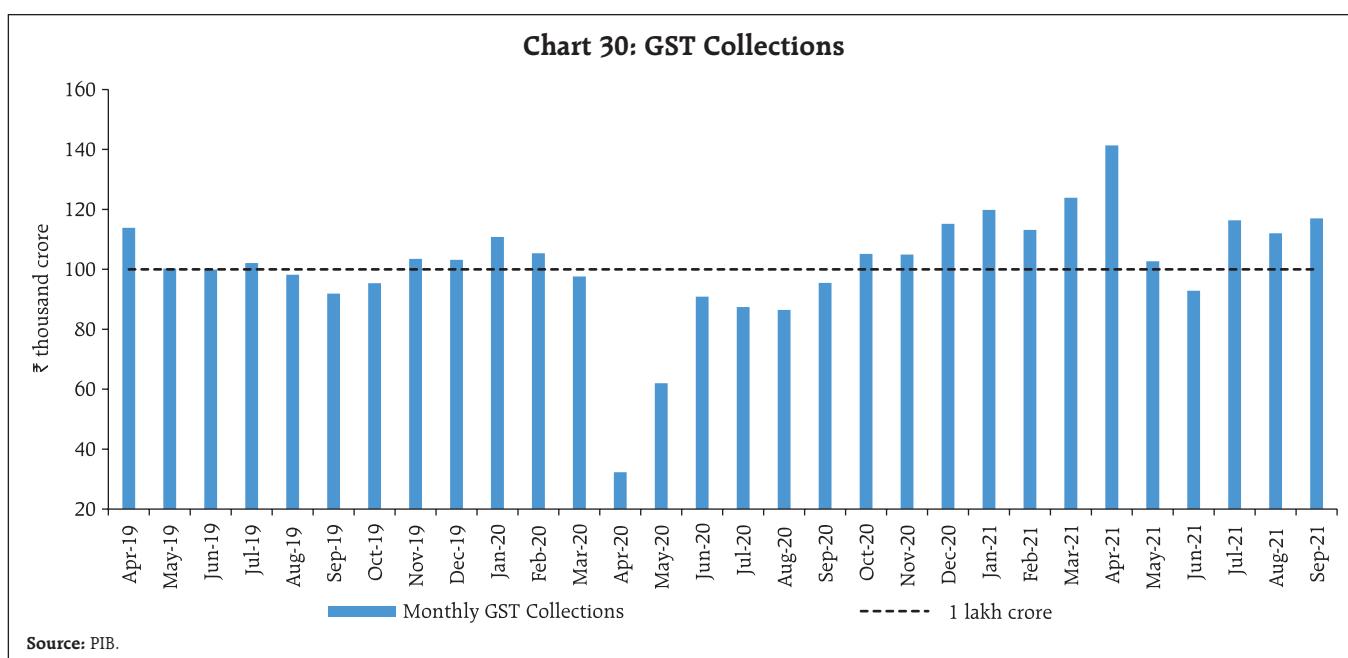
**Table 1: Tax Collections during April-September**

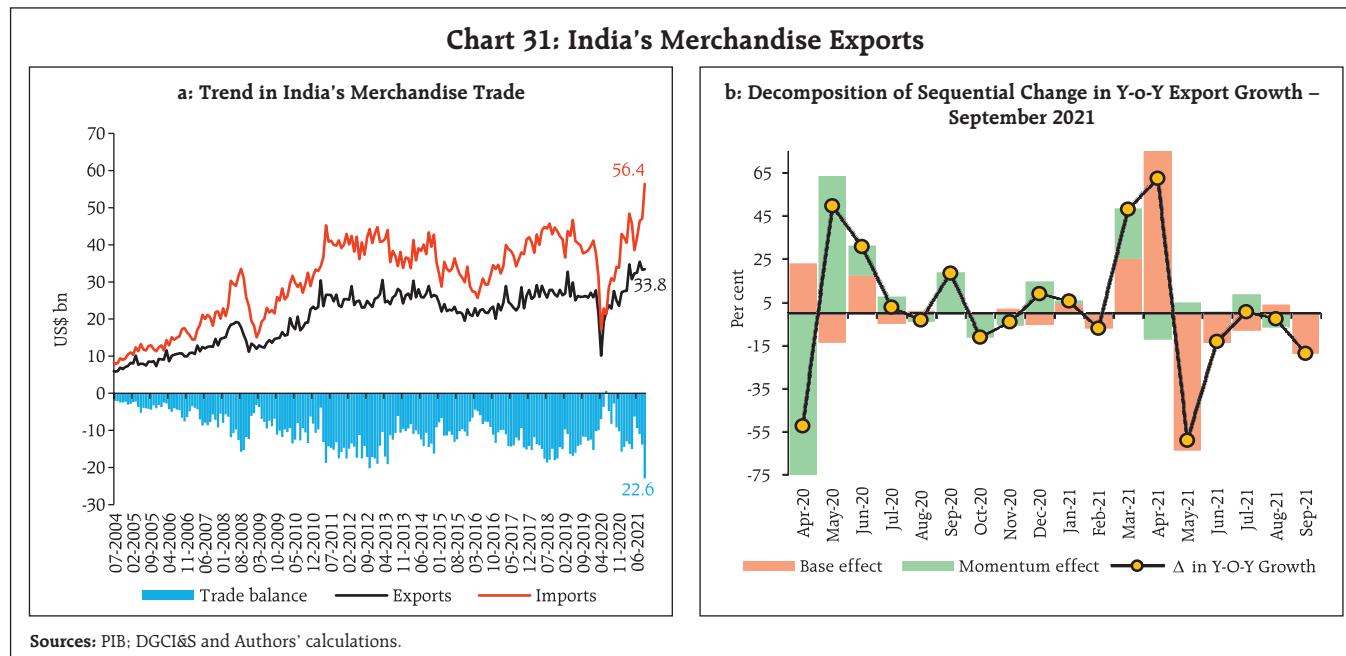
	Actuals (₹ thousand crore)			Growth Rate (per cent)	
	2019-20	2020-21	2021-22	2021-22 (over 2019-20)	2021-22 (over 2020-21)
Advance Tax	221	162	253	14.6	56.4
Direct Tax	449	327	571	27.1	74.4

Note: Based on data up to Sep 22, 2021.

commodity groups accounting for more than 70 per cent of exports recorded an expansion above their pre-COVID levels (Chart 32a). During April-September 2021, key commodity groups covering around half of exports were able to sustain growth consistently (Chart 33a to 33d).

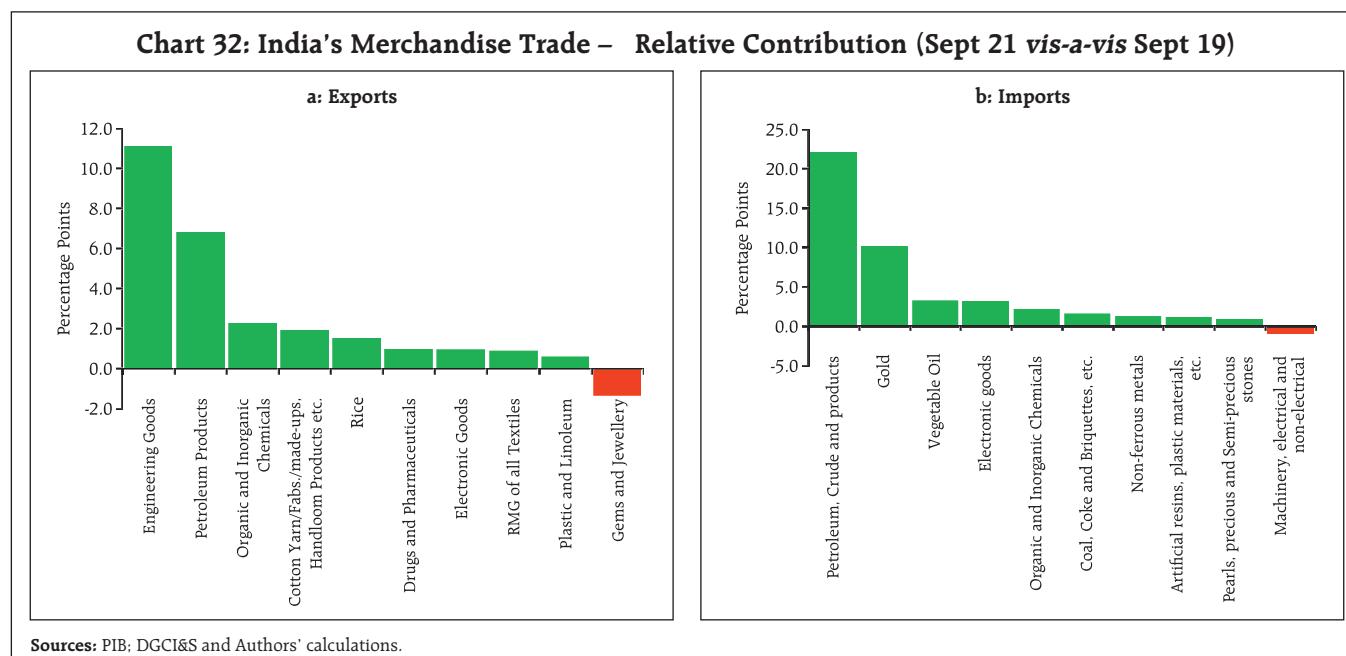
Mirroring the spurt in domestic economic activity, India's merchandise imports touched a historic monthly high of US\$ 56.4 billion in September, riding on strong momentum (Chart 34a and 34b). Imports grew by almost 50 per cent during the month over the corresponding pre-pandemic level, fuelled by strong domestic demand for petroleum products, gold, vegetable oil and electronic goods. Imports of vegetable oil doubled from last year's level due to a reduction in customs duty and stockpiling ahead of

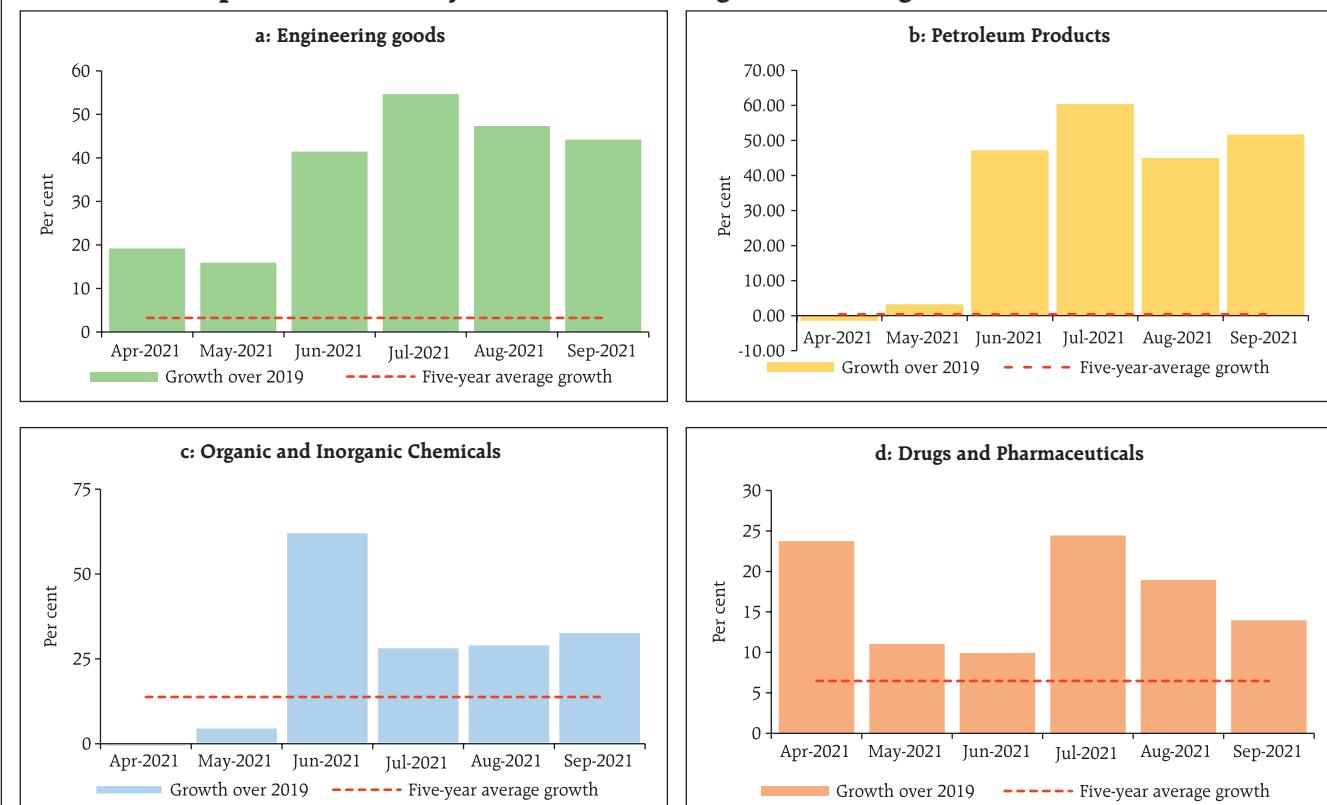




festivals. Higher electronic goods imports reflected mega sales planned by e-commerce companies in October 2021, apart from inventory management due to the ongoing chip shortage (Chart 32b).

Purchases of coal, coke and briquettes from abroad have witnessed a massive spurt in the last two months in view of low coal stock positions of thermal plants (Chart 35a). Overall, non-oil-non-gold imports rose

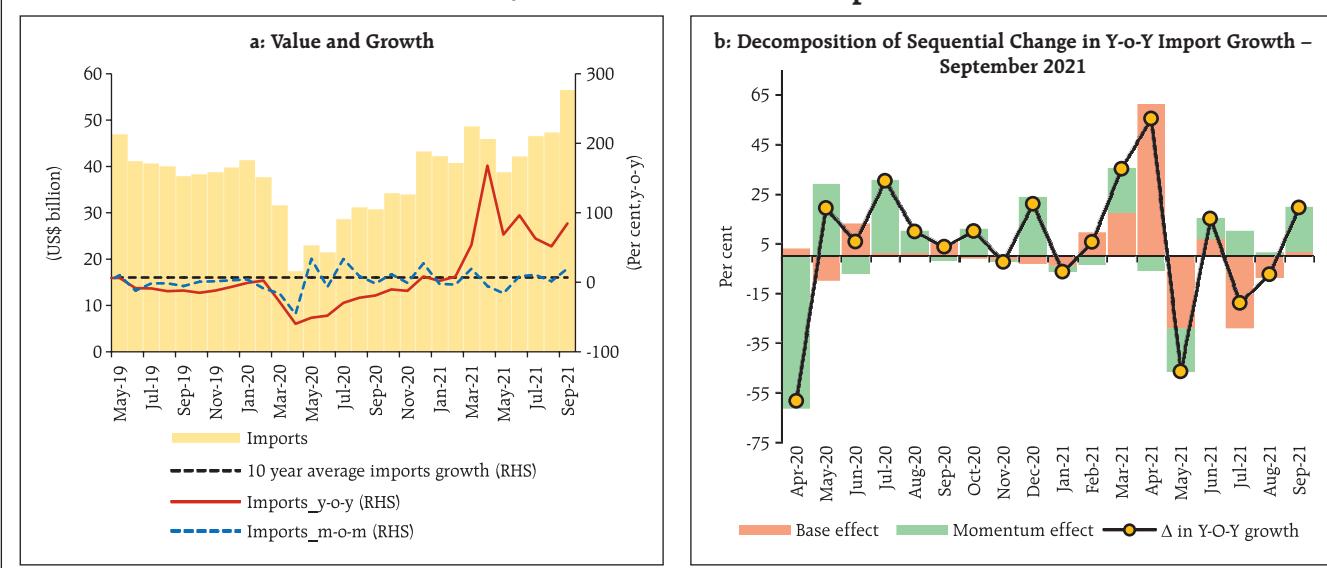


**Chart 33: Export Growth in Key Commodities – Long Term Convergence (Growth over 2019 level)**


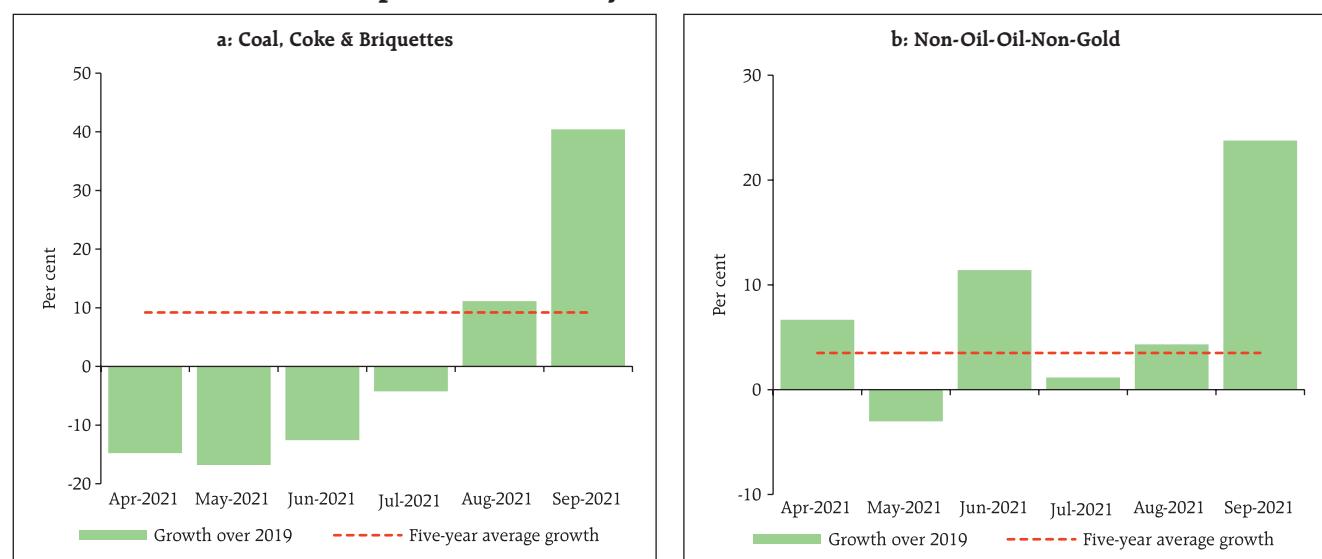
Sources: PIB; DGCIS and Authors' calculations.

by more than 20 per cent in September over the pre-pandemic level (Chart 35b). The trade deficit widened

to a record level of US\$ 22.6 billion, increasing both sequentially and over pre-pandemic levels.

**Chart 34: India's Merchandise Imports**


Sources: PIB; DGCIS and Authors' calculations.

**Chart 35: Import Growth in Key Commodities (Growth over 2019 level)**

Sources: PIB; DGCIS and Authors' calculations.

### Aggregate Supply

September turned out to be a month of revival rather than retreat for this year's south-west monsoon (SWM). The rain deficit during the critical sowing months of July and August was offset by excess rains in September to the extent of 35 per cent, particularly in Central (85 per cent above LPA) and North-West (40 per cent above LPA) regions. The SWM season closed as 'normal' with a shortfall of only 1 per cent from the LPA.

The September rainfall has brightened the prospects of *Kharif* crops, barring for some standing crop losses due to excess precipitation/flooding in respect of groundnut, soyabean, tur, urad, paddy and moong. It also bodes well for the forthcoming *Rabi* season with adequate soil moisture and replenished water storage levels.

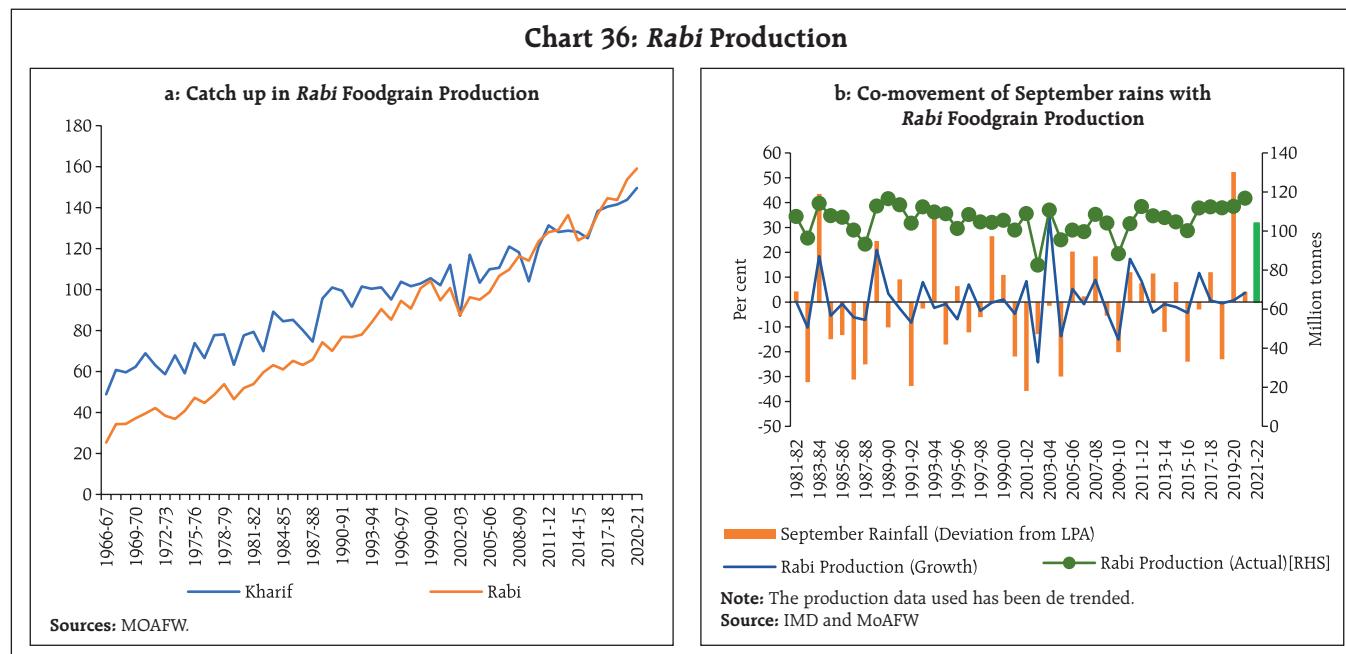
Over the last two decades, *Rabi* foodgrains production levels have gradually caught up with that of *Kharif* production and has even surpassed the

latter in some years, especially when reinforced by heavy rains in September (Chart 36a). The average deviation of September rains from the LPA has narrowed from (-)2.9 per cent during 1981-2000 to (-)1.0 per cent during 2001-2020. The MSPs that were recently announced for the upcoming *Rabi* season have been higher than in the previous year by 2.0 per cent (wheat) and 8.6 per cent (rapeseed and mustard).

Key inputs such as availability of seeds also augur well for *Rabi* prospects (Chart 37a and b).

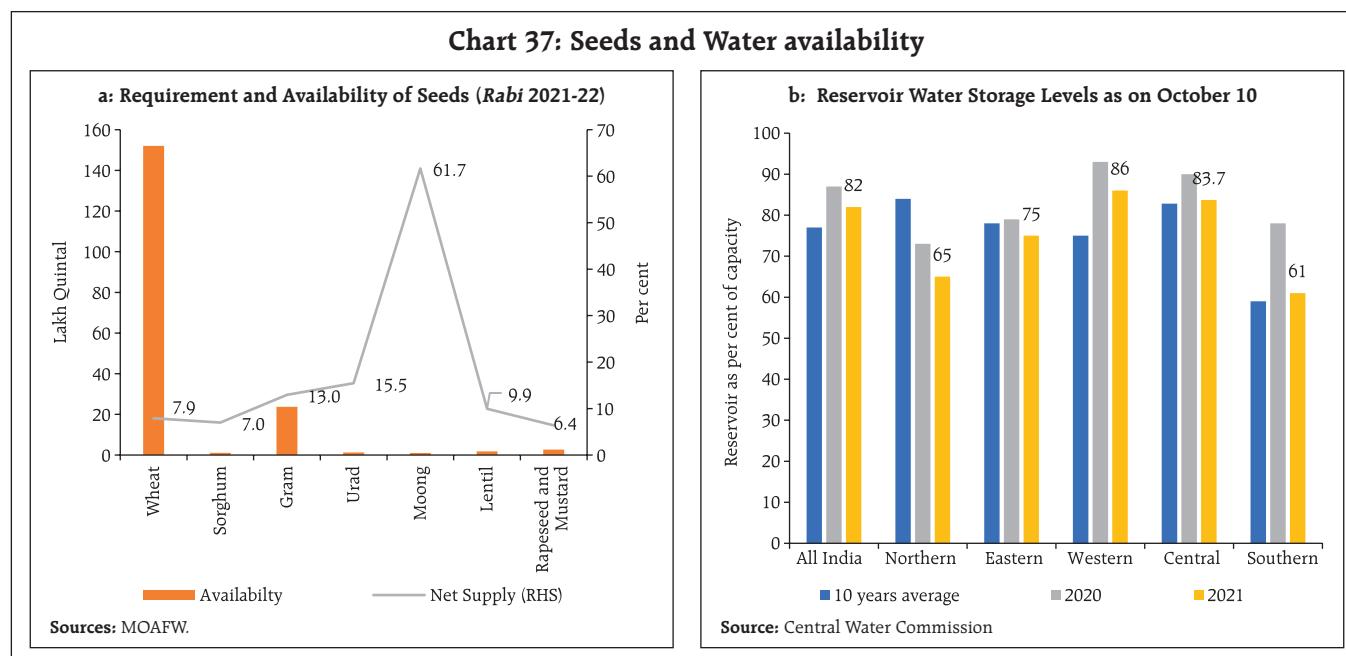
As regards fertilisers, urea and other major fertilisers, except Di-ammonium Phosphate (DAP), are available in surplus (Chart 38a and b). The Government has hiked the subsidy on DAP (critical for growing vegetable crops) thereby insulating farmers from higher input costs.

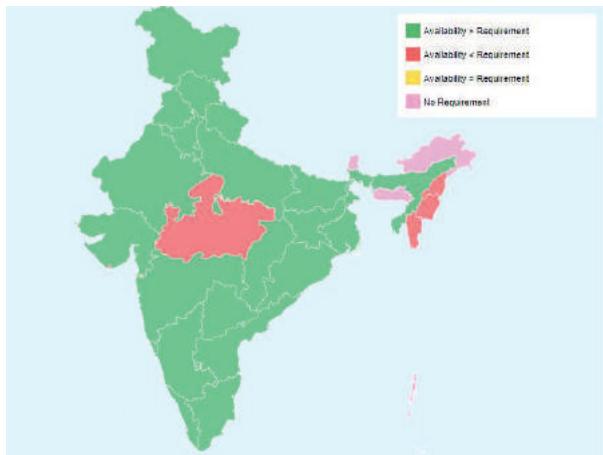
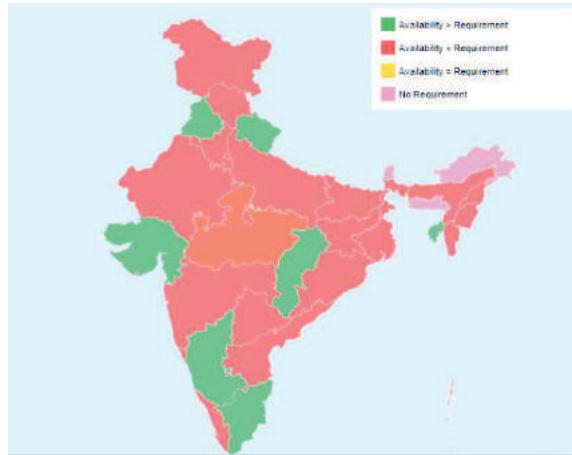
The month of September also marks the end of the *Kharif* Marketing Season (KMS) for 2020-21. Rice procurement for KMS 2020-21 has progressed



smoothly, with a purchase record of 89.1 million tonnes of paddy (including *kharif* 71.8 million tonnes plus *rabi* 17.3 million tonnes) as against 76.7 million tonnes a year ago (Chart 39). Over 13 million farmers

have benefitted from KMS procurement operations, with MSP outflow of ₹1.7 lakh crore (at MSP rate of ₹1888/quintal). Meanwhile, as of October 1, 2021, the public stocks of rice and wheat were 3.4 and 2.3



**Chart 38: Requirement and Availability of Overall Fertilisers****a: Requirement and Availability of Overall Fertilisers  
(Apr 01-Sep 28, 2021)****b: Requirement and Availability of DAP  
(Apr 01-Sep 28, 2021)**

Sources: Department of Fertilisers.

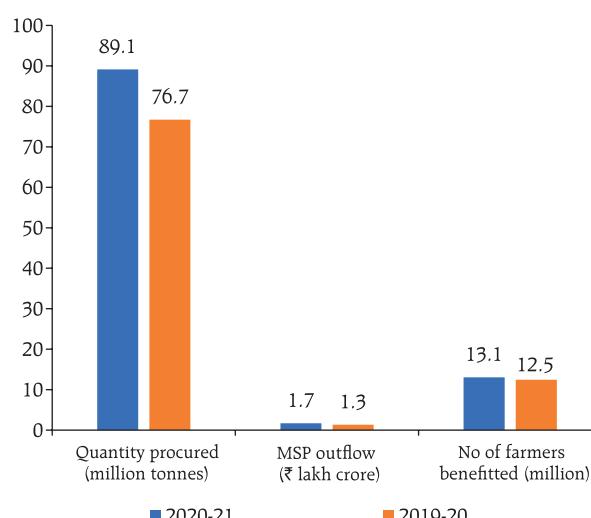
times the buffer norms, respectively, auguring well for food security, including the ongoing third phase of the *Pradhan Mantri Garib Kalyan Anna Yojana*.

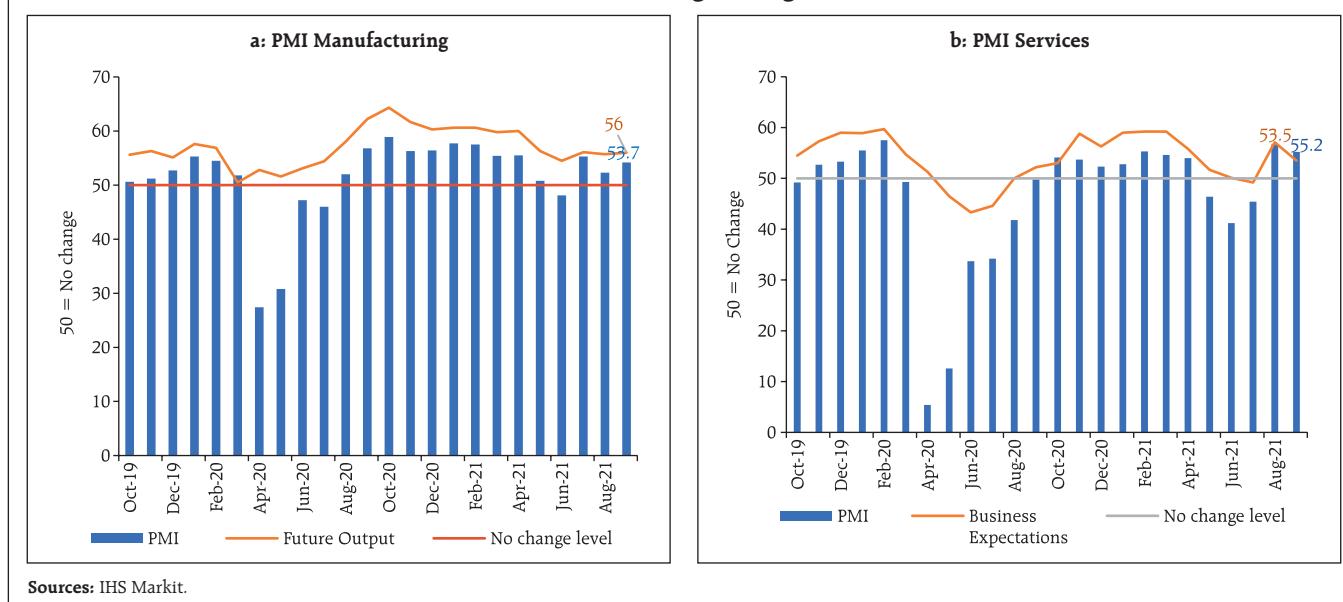
In the industrial sector, the headline PMI Manufacturing Index improved to 53.7 in September from 52.3 a month ago, expanding for the third

consecutive month. Improvement in demand and pick up in global sales led firms to scale up production and employ more inputs. After staying in contraction during May-July 2021, the services PMI expanded sequentially in August-September. Reopening of outlets and increased footfalls boosted consumption of services. The Business Expectations Index (BEI) for services emerged out of contraction zone in July 2021 and surged to a five-month high in August before expanding to 53.5 in September (Chart 40).

Parts of the services sector recorded strong growth y-o-y, as indicated by improvement in trade, hotels, transport and communication, and also reflected in GST e-way bills (Table 2).

Policy measures to address constraints faced by the telecom sector; and the PLI scheme for textiles, auto and drone industries are imparting confidence in the recovery. A ₹100 trillion plan for multi-modal connectivity, Gati Shakti, aimed at accelerating economic growth by building infrastructure, integrating key modes of transportation — road, rail,

**Chart 39: Paddy Procurement during KMS 2020-21**

**Chart 40: Purchasing Managers' Index**

air, waterways — and reducing logistics cost has also been announced.<sup>18</sup> Thus aggregate supply conditions

are recouping as supply disruptions and bottlenecks get alleviated.

**Table 2: High Frequency Indicators – Services**

Sectors	Indicators	Growth (y-o-y, per cent)				Growth over 2019 (per cent)				
		Jun-21	Jul-21	Aug-21	Sep-21	May 21/ May 19	Jun 21/ Jun 19	Jul 21/ Jul 19	Aug 21/ Aug 19	Sep 21/ Sep 19
Urban Demand	Passenger Vehicles Sales	119.3	44.7	7.6	-41.2	-61.2	10.6	39.1	22.8	-25.6
Rural Demand	Two Wheelers Sales	4.0	-2.1	-14.6	-17.4	-79.6	-36.0	-17.1	-12.1	-7.7
	Three Wheelers Sales	-8.8	40.5	59.7	53.8	-97.6	-81.9	-67.9	-60.5	-56.0
	Tractor Sales	18.9	3.3	-17.0	-14.8	-4.3	45.5	43.1	45.0	9.3
Trade, hotels, transport, communication	Commercial Vehicles Sales	234.4	24.5		-49.2		-0.6			
	Railway Freight Traffic	20.5	18.4	16.9	3.6	9.5	11.2	13.0	21.5	19.7
	Port Cargo Traffic	19.3	6.7	11.5	0.5	2.2	2.0	-7.2	-0.1	-1.4
	Domestic Air Cargo Traffic	43.0	41.3	35.7		-34.2	-25.6	-17.2	-13.1	
	International Air Cargo Traffic	46.9	31.5	25.8		-9.4	-5.6	-8.0	-5.5	
	Domestic Air Passenger Traffic	53.8	140.7	132.6		-82.9	-74.3	-58.1	-43.8	
	International Air Passenger Traffic	31.2	45.9	119.2		-91.2	-90.8	-86.1	-77.5	
	GST E-way Bills (Total)	25.9	32.7	33.3	18.3	-26.3	9.9	23.0	28.6	29.6
	GST E-way Bills (Intra State)	24.3	31.6	30.8	15.6	-20.6	14.5	26.5	32.7	33.0
	GST E-way Bills (Inter State)	28.8	34.4	37.2	22.3	-34.4	3.2	17.9	22.9	25.0
Construction	Steel Consumption	28.3	4.2	-2.9	-4.7	-11.1	-5.1	-6.6	-13.9	-4.6
	Cement Production	7.5	21.7	36.3		-14.9	0.2	5.3	16.5	
PMI Services	Output Index	41.2	45.4	56.7	55.2					
	Business expectation	50.1	49.2	57.1	53.5					

Sources: IHS Markit; SIAM; Airports Authority of India; Tractor and Mechanisation Association; Indian Ports Association; GSTN; Office of the Economic Advisors; Ministry of Railway; and Joint Plant Committee.

<sup>18</sup> Business Standard, September 30, 2021.

## Inflation

In September 2021, headline CPI inflation fell by one percentage point to 4.3 per cent, according to the National Statistical Office (NSO)'s data release on October 12 (Chart 41a). A large favourable base effect (month-on-month change in prices a year ago) of 1.1 percentage points overwhelmed the price momentum (month-on-month change in prices in the current month) of around 20 bps to bring about this desirable outcome.

Among constituents, food and beverages inflation registered a sharp moderation on large favourable base effects, easing to 1.6 per cent in September from 3.7 per cent a month ago. These base effects pushed vegetables prices further into deflation – to (-) 22.5 per cent in September from (-) 11.7 per cent in August. While inflation in prices of eggs, meat, fish, fruits, spices and non-alcoholic beverages moderated, it edged up in oils and fats, milk, sugar and prepared meals sub-groups. Cereals prices remained in deflation. Food (with a weight of 45.86 per cent in the

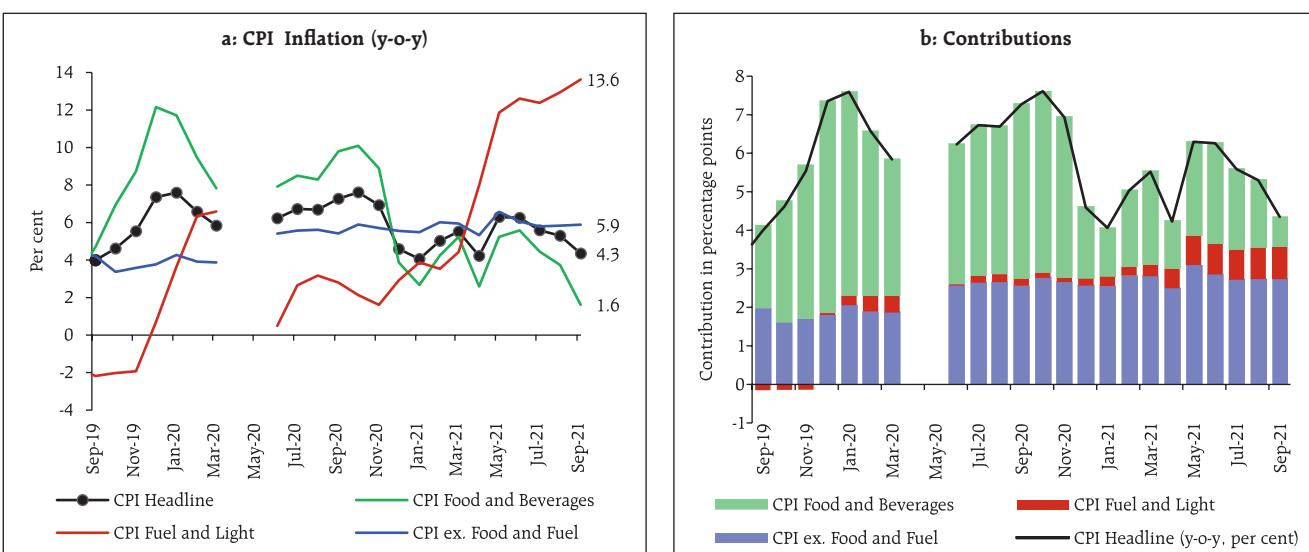
CPI basket) contributed only 18 per cent of headline inflation in September (Chart 41b).

Fuel inflation surged by close to 70 bps in September to scale an all-time high of 13.6 per cent (in the 2012=100 base year series). This is attributable to a substantial pick up in LPG prices. Fuel (weight of 6.84 per cent in the CPI basket) contributed 20 per cent of headline inflation in September (Chart 41b).

CPI inflation excluding food and fuel<sup>19</sup> or core inflation at 5.9 per cent in September (as against 5.8 per cent in August) stayed elevated. Price inflation in respect of clothing and footwear, personal care and effects, household goods and services, recreation and amusement, and pan-tobacco and intoxicant sub-groups firmed up.

High frequency food price data from the Ministry of Consumer Affairs, Food and Public Distribution (Department of Consumer Affairs) for October so far (October 1-12, 2021) points to some uptick in prices of cereals. In case of pulses, *tur* and *moong* prices

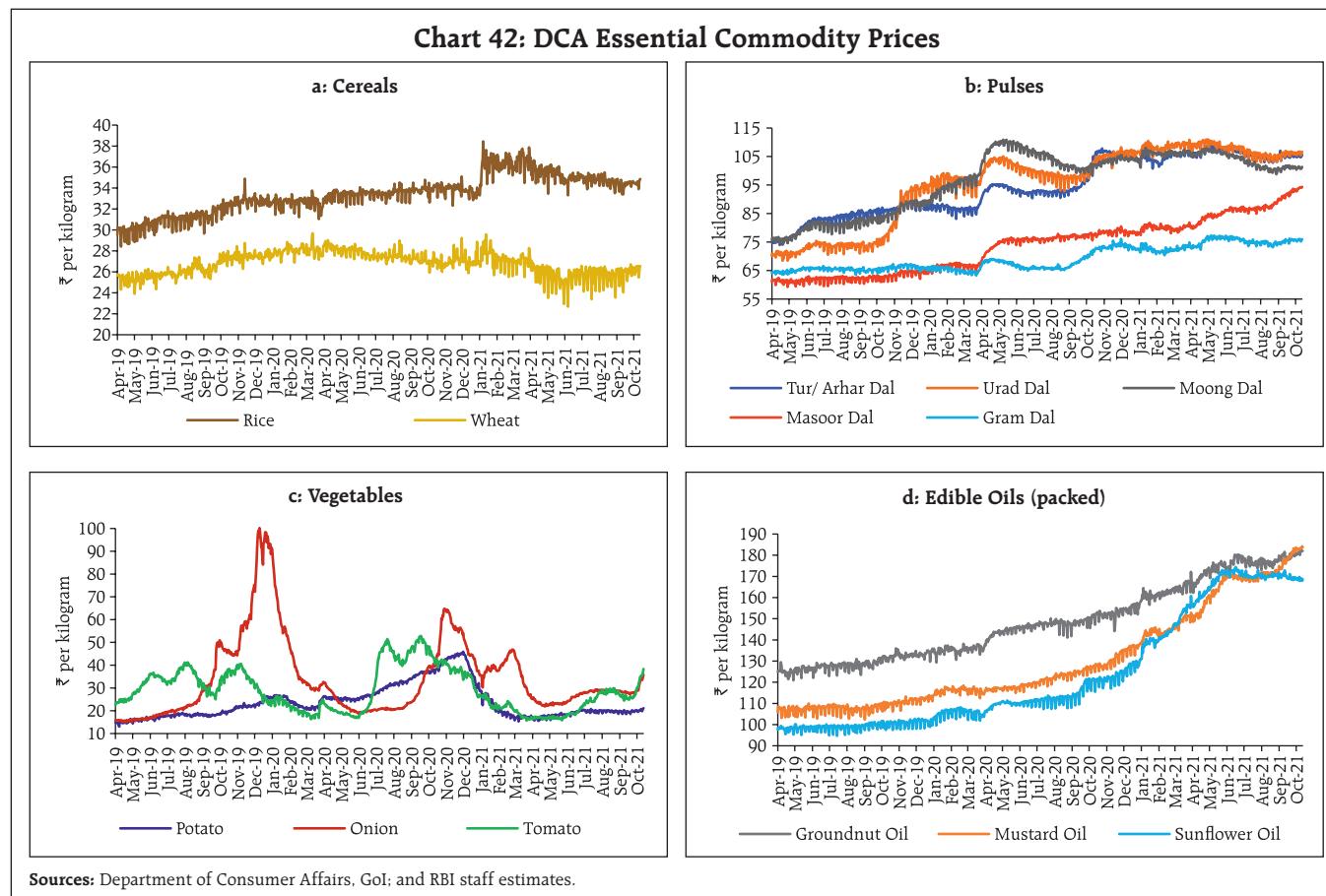
**Chart 41: CPI Inflation**



**Note:** CPI inflation for April-May 2021 were computed based on imputed CPI indices for April-May 2020.

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

<sup>19</sup> CPI excluding food and fuel is worked out by eliminating the groups 'food and beverages' and 'fuel and light' from the headline CPI.



registered a decline, but *masoor*, *gram* and *urad* prices edged up. Among edible oils, prices of mustard oil and vanaspati increased, while those of sunflower oil declined. Among vegetables, prices of tomato and onion have seen sharp increases in October so far; however, these prices remain lower than a year ago (Chart 42).

Pump prices started to register increases towards the end of September and as on October 12, 2021, petrol price stood at ₹105.43 per litre (average of the pump prices in the four major metros) and diesel was at ₹97.02 per litre. Both kerosene and LPG prices edged up in the first half of October (Table 3).

Input costs, as reflected in the PMIs, increased in September across manufacturing and services. The pass-through of higher input costs to selling prices remained muted, especially in services. The firms

polled by the Reserve Bank's in-house surveys on manufacturing, services and infrastructure outlook indicated a likely amplification of input cost pressures in Q3:2021-22.

**Table 3: Petroleum Product Prices**

Item	Unit	Domestic Prices			Month-over-month (per cent)	
		Oct-20	Sep-21	Oct-21 ^	Sep-21	Oct-21
Petrol	₹/litre	83.88	102.30	104.22	-0.7	1.9
Diesel	₹/litre	74.32	92.62	95.52	-0.8	3.1
Kerosene (subsidised)	₹/litre	21.45	33.18	34.56	-3.2	4.2
LPG (non-subsidised)	₹/cylinder	604.63	895.13	910.13*	2.9	1.7

^ : For the period October 1-12, 2021.

\*: Since October 6, 2021.

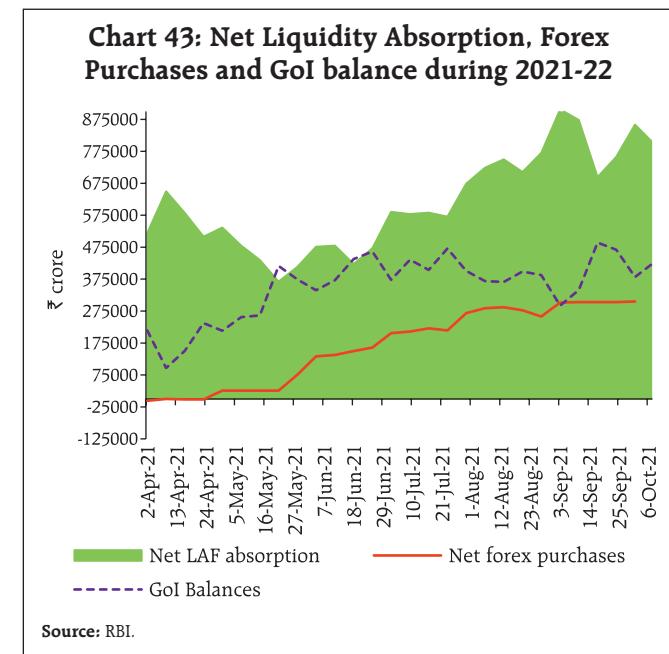
**Note:** Other than kerosene, prices represent the average Indian Oil Corporation Limited (IOCL) prices in four major metros (Delhi, Kolkata, Mumbai and Chennai). For kerosene, prices denote the average of the subsidised prices in Kolkata, Mumbai and Chennai.

**Sources:** IOCL; Petroleum Planning and Analysis Cell (PPAC); and RBI staff estimates.

#### IV. Financial Conditions

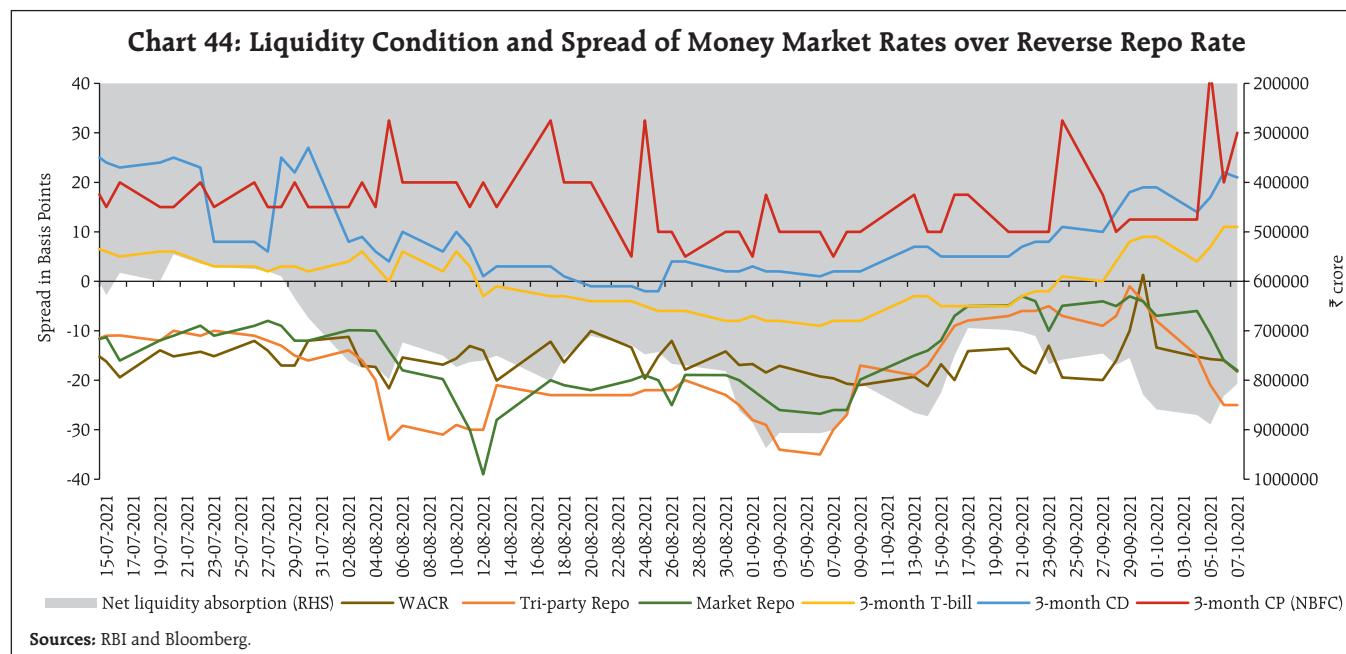
Through September and into October, the Reserve Bank engaged in proactively rebalancing systemic liquidity. The daily net liquidity absorption under the liquidity adjustment facility (LAF) averaged ₹7.8 lakh crore in the second fortnight of September to October (up to Oct 13), reducing from ₹8.9 lakh crore in the first fortnight of September (Chart 43). During this period, the Reserve Bank also resorted to fine tuning operations of varying maturities and amounts on top of its main 14-day variable rate reverse repo (VRRR) operation, which was conducted for ₹4.0 lakh crore by end-September. On October 8, the Reserve Bank announced that it would further augment the size of 14-day VRRR auctions conducted every fortnight in the following manner: ₹4.0 lakh crore on October 8; ₹4.5 lakh crore on October 22; ₹5.0 lakh crore on November 3; ₹5.5 lakh crore on November 18; and ₹6.0 lakh crore on December 3. For the first time, the Reserve Bank conducted G-SAP 'twists', by buying government securities of ₹30,000 crore through two auctions on September 23 and September 30, with simultaneous sale of an identical amount in both the auctions so that in the net, these operations were rendered liquidity neutral. In its policy statement on October 8, the Reserve Bank noted that the need for undertaking further G-SAP operations does not arise at this juncture given the liquidity overhang, but it committed to maintaining the readiness to undertake G-SAP as and when warranted by the evolving liquidity conditions.

With these operations, the overnight money market rates particularly in the collateralised segment – the tri-party repo and the market repo rates – inched closer to the lower bound of the LAF corridor, though softened again in October (up to October 13). On an average, both the rates stayed below the reverse repo rate by 14 bps and 10 bps, respectively. In the



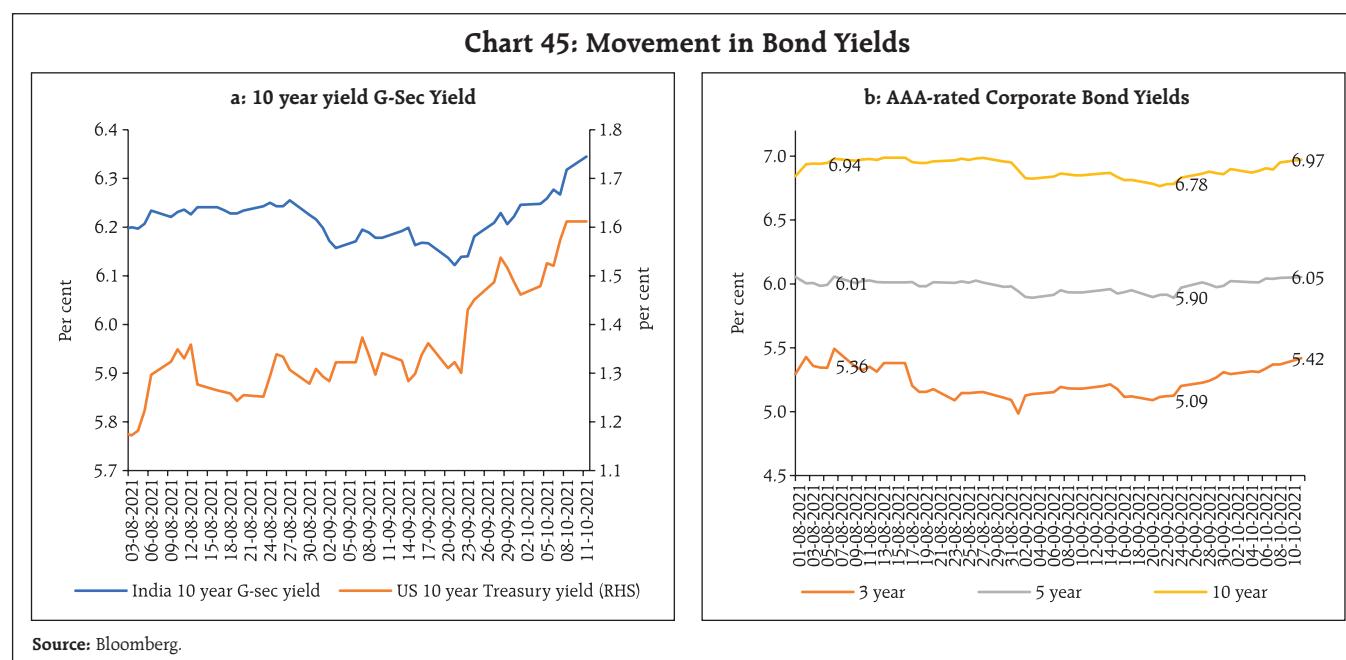
outer term money market segments, the 3 month T-bill rate moved above the reverse repo rate, the spreads on certificate of deposits (CDs) and commercial paper (CP)-NBFCs (over the reverse repo rate) firmed up to an average of 12 bps and 21 bps, respectively (Chart 44).

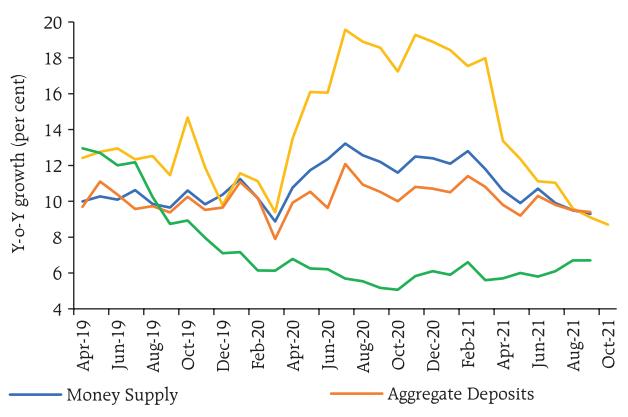
In the government securities market, the yield on 10 year G-sec hardened towards the end of September and on October 14, it closed at 6.33 per cent (Chart 45a). Global factors, including rising US treasury yields and crude oil prices, imparted a hardening bias to domestic yields. In the primary segment, positive impact of the announcement of the Central Government's borrowing calendar for H2:2021-22 – which essentially subsumes GST compensation cess related shortfalls within its envelope was overshadowed by global spillovers. During September and October so far, all auctions sailed through smoothly. Tracking the movement in G-sec yields, yields on corporate bonds too shed their softening bias and trended higher from end-September (Chart 45b).



Overall monetary and credit conditions remained congenial. The growth in scheduled commercial banks' (SCBs') credit to the commercial sector picked up, but remained muted by pre-pandemic standards, at 6.7 per cent (5.2 per cent a year ago) (Chart 46).

Monetary transmission in the credit market improved since March 2020 on the back of abundant surplus liquidity. Between March 2020 and September 2021, the one-year median marginal cost of funds-based lending rate (MCLR) of SCBs softened cumulatively by 103 bps, mirroring the reduction in the overall cost of funds (Table 4).



**Chart 46: Monetary and Credit Aggregates**

**Note:** 1. Data pertain to last reporting Friday of every month for money supply, aggregate deposits and SCBs' credit; and last Friday of every month for reserve money.  
2. For the month of October, however, reserve money data as on October 8, 2021 are included.

**Source:** RBI.

There has been a moderation in deposit rates across all tenors. The median term deposit rate on fresh deposits has softened by 154 bps through March 2020 to September 2021. A dip of 180 bps is discernible across shorter tenor deposits of up to one-year maturity (Chart 47). The weighted average domestic term deposit rate (WADTDR) on outstanding rupee

**Table 4: Transmission from the Repo Rate to Banks' Deposit and Lending Rates**

(Variation in basis points)

Period	Repo Rate	Term Deposit Rates		Lending Rates		
		Median TDR (Fresh Deposits)	WADTDR (Out-standing Deposits)	1 - Year Median MCLR	WALR (Out-standing Rupee Loans)	WALR (Fresh Rupee Loans)
Feb 2019 - Sept 2019	-110	-9	-7	-30	2	-43
Oct 2019 – Sept 2021*	-140	-187	-174	-125	-120	-147
Mar 2020 - Sept 2021*	-115	-154	-135	-103	-102	-121
Feb 2019 – Sept 2021*	-250	-213	-181	-155	-118	-190

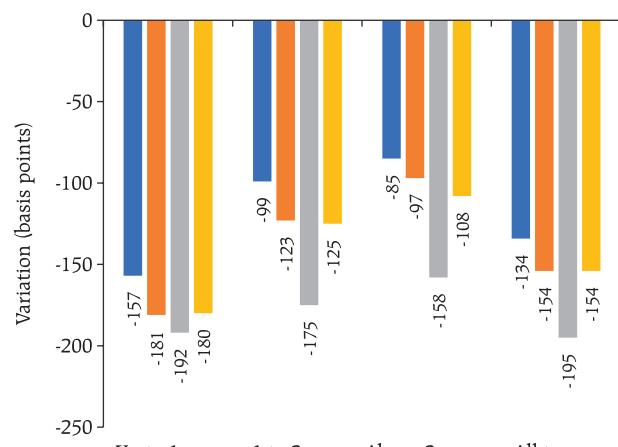
\*: Latest data on WALRs and WADTDR pertain to August 2021.

WALR: Weighted average lending rate;

WADTDR: Weighted average domestic term deposit rate;

MCLR: Marginal cost of funds-based lending rate; TDR: Term deposit rate.

**Source:** RBI.

**Chart 47: Maturity-wise Transmission to Median Term Deposit Rate (March 2020 to September 2021)**

**Sources:** RBI and RBI staff estimates.

deposits has eased by 135 bps during March 2020 to August 2021. Across domestic banks, private banks have exhibited higher pass-through to term deposit rates, compared to their public sector counterparts, on account of vigorous deposit growth.

The Government of India (GoI) left interest rates on small savings instruments (SSIs) unchanged for the sixth straight quarter.<sup>20</sup> The currently prevailing rates on various schemes range 47-178 bps higher than the formula-based rates for Q3:2021-22 (Table 5).

The stock market continued its bull run, with the BSE Sensex crossing the historical 60,000 mark in September 2021 (Chart 48a). Indian stock markets

<sup>20</sup> The interest rates on small saving schemes are administered and set by the Government of India. These administered interest rates are linked to market yields on G-secs with a lag and are fixed on a quarterly basis at a spread ranging from 0-100 bps over and above G-sec yields of comparable maturities.

**Table 5: Interest Rates on Small Savings Instruments – Q3:2021-22**

Small Savings Scheme	Maturity (years)	Spread (Percentage point) \$	Average G-sec Yield (%) of Corresponding Maturity (June - August 2021)	Formula based Rate of Interest (%) (applicable for Q3:2021-22)	Government Announced Rate of Interest (%) in Q3:2021-22	Difference (basis points)
(1)	(2)	(3)	(4)	(5) = (3) + (4)	(6)	(7) = (6) - (5)
Savings Deposit	-	-	-	-	4.00	-
Public Provident Fund	15	0.25	6.38	6.63	7.10	47
Term Deposits						
1 Year	1	0	3.72	3.72	5.50	178
2 Year	2	0	4.23	4.23	5.50	127
3 Year	3	0	4.74	4.74	5.50	76
5 Year	5	0.25	5.76	6.01	6.70	69
Recurring Deposit Account	5	0	4.74	4.74	5.80	106
Monthly Income Scheme	5	0.25	5.73	5.98	6.60	62
Kisan Vikas Patra	124	0	6.38	6.38	6.90	52
NSC VIII issue	5	0.25	5.89	6.14	6.80	66
Senior Citizens Saving Scheme	5	1.00	5.76	6.76	7.40	64
Sukanya Samriddhi Account Scheme	21	0.75	6.38	7.13	7.60	47
Months#						

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

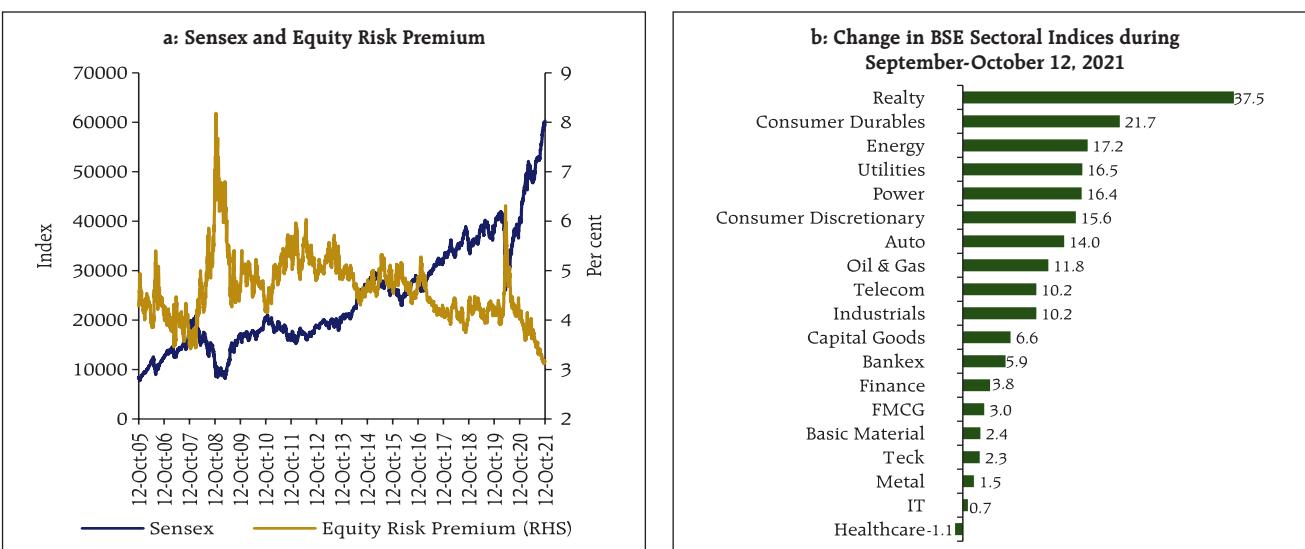
#: Current maturity is 124 months.

**Note:** Compounding frequency varies across instruments.

**Sources:** Government of India; FBIL; and RBI staff estimates.

have more than doubled in terms of index value for Sensex and Nifty since the lows of March 2020. The announcement of the Production Linked Incentive

(PLI) scheme for automobile and drone industries, relief measures for the telecom sector, and approval of a guarantee programme for issuance of securities by

**Chart 48: Equity Markets**

**Sources:** Bloomberg; and RBI staff Calculations.

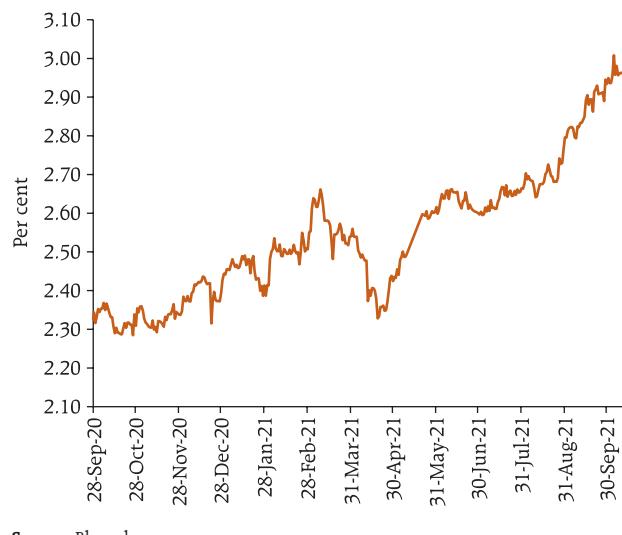
the National Asset Reconstruction Company Limited (NARCL) buoyed the mood of the market. Buoyed further by prospects of robust corporate earnings results in Q2: 2021-22, the BSE Sensex extended gains to October 2021, closing at 61,306 on October 14, 2021. The implied equity risk premium, a measure of expected excess return on equities over G-secs, closed at its lowest level in September 2021.

Among sectors, the BSE Realty index registered sharp gains, hitting a 11-year high on signs of pickup in demand (Chart 48b).

India's stock market capitalisation soared to US\$3.5 trillion, surpassing that of France and becoming the sixth most valuable market in the world.<sup>21</sup> India's share in global stock market capitalisation has increased to 3 per cent on October 13, 2021 (Chart 49).

Net inflows from small towns and cities into mutual funds are growing rapidly. The share of 'other cities' (beyond the top 110 cities) in assets under management (AUM) data has surged to 15.44 per cent at end-June 2021 from 10.21 per cent at end-June 2020. Floating rate mutual funds or 'floater funds'<sup>22</sup> have witnessed higher inflows in the recent period. During H1: 2021-22, floater funds witnessed net inflows of ₹33,083 crore, considerably higher than ₹12,170 crore a year ago. The AUM of floater funds has risen to ₹1.01 lakh crore at end-September 2021 from

**Chart 49: India's Share in World Market Capitalisation**



₹46,425 crore a year ago (Chart 50a). Concomitantly, floating rate corporate bond issuances have also risen in recent months (Chart 50b).

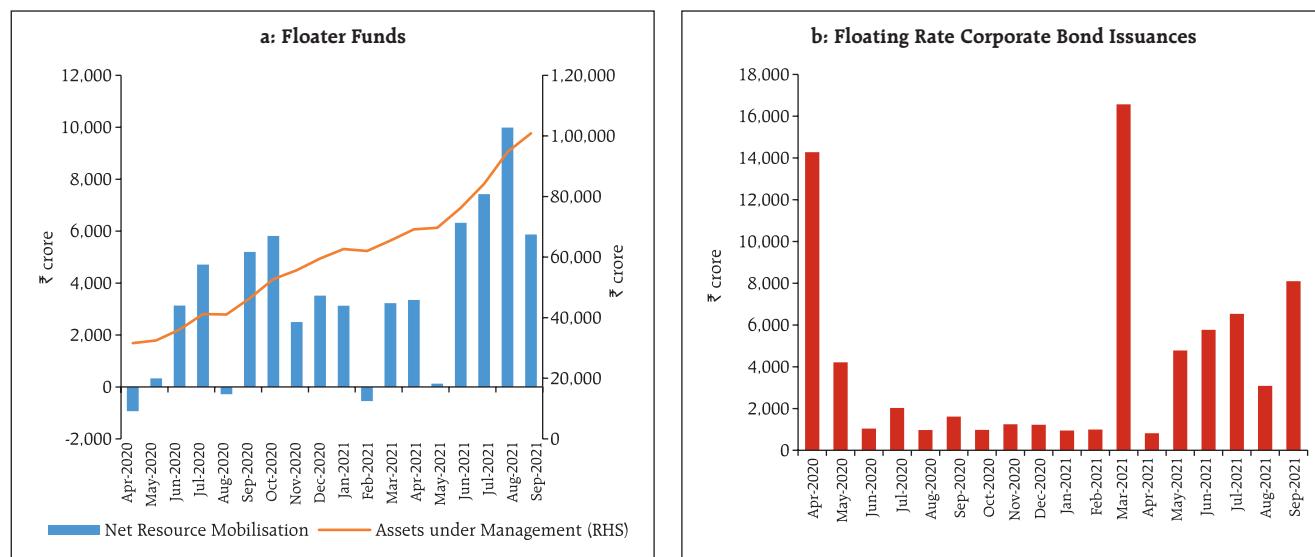
In April-August 2021, gross inward foreign direct investment (FDI) at US\$ 36.3 billion was comparable with its level a year ago (Chart 51). A rise in outward FDI during the period resulted in net FDI of US\$ 19.2 billion. The major FDI equity recipient sectors include manufacturing, communication services, computer services, education, research and development, and transport.

Foreign portfolio investors (FPIs) were net purchasers for the second consecutive month in the domestic equity market in September 2021, driven by the anticipation of stronger recovery and the performance of the domestic stock market (Chart 52). India was the second largest recipient of FPI equity investment among the emerging markets, after China.<sup>23</sup> FPIs remained net buyers in the domestic

<sup>21</sup> <https://timesofindia.indiatimes.com/business/markets/sensex/sensex-tops-59k-india-6th-most-valued-market/articleshow/86281158.cms>

<sup>22</sup> Floater funds have lower portfolio duration, implying lower sensitivity to interest rate rates and lower mark-to-market risks for investors. These funds are, therefore, usually preferred by those sets of investors who are looking to protect against the downside price risk arising from an increase in interest rates. According to CRISIL, in the six months ended August 2021, a period that saw flat or rising interest rates, floating rate funds have generated the best returns of 3.40 per cent compared with 1.66-3.10 per cent for other categories of similar tenure and composition (Source: <https://www.crisil.com/en/home/our-analysis/views-and-commentaries/2021/09/floater-funds-in-the-zone-as-interest-rates-rise.html>)

<sup>23</sup> Source: Institute of International Finance.

**Chart 50: Floating Rate Instruments**

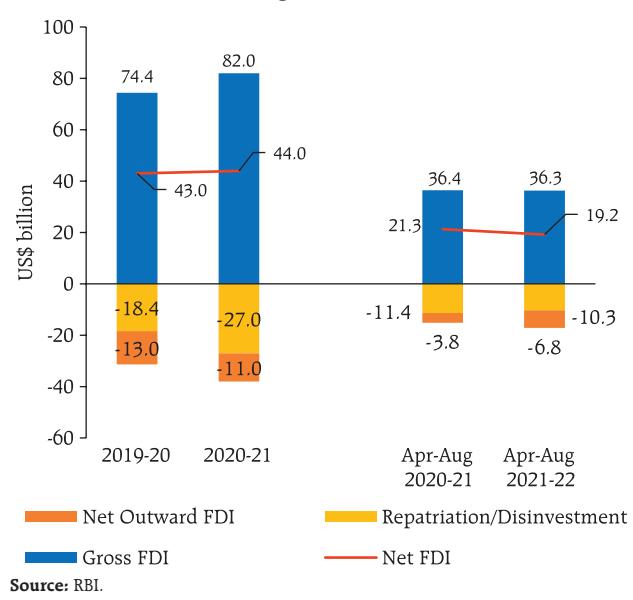
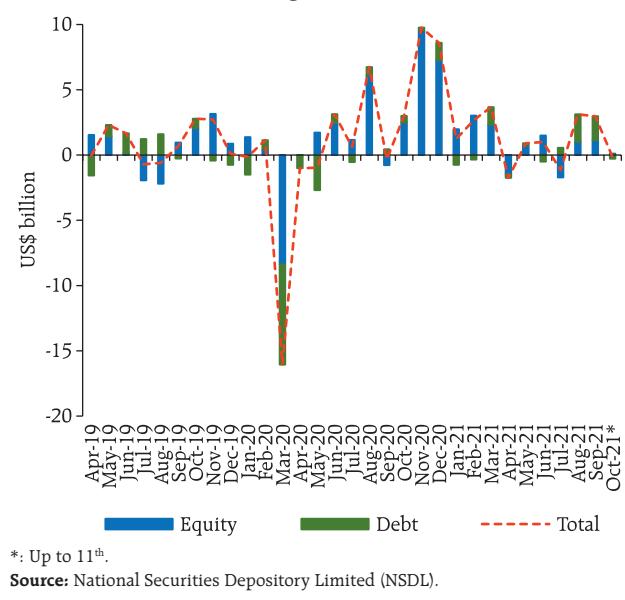
Sources: Association of Mutual Funds in India (AMFI); and Prime Database.

debt market in the third straight month in September. Total FPI investment in equity and debt instruments was US\$ 3.0 billion in September, about the same as a month ago (US\$ 3.1 billion).

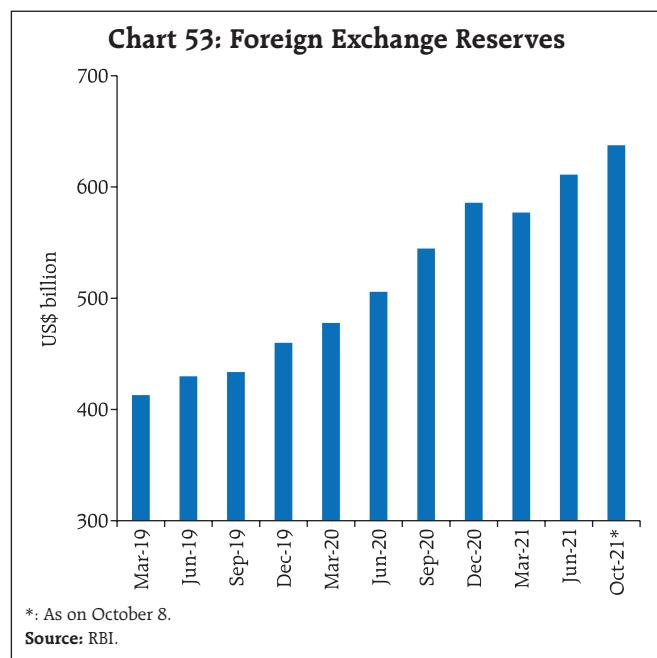
Foreign exchange reserves were at US\$ 639.5 billion on October 8, 2021 (Chart 53), providing cover

equivalent to 14 months of imports projected for 2021-22 or 112 per cent of total external debt outstanding or 52 per cent of total external liabilities at end-June 2021.<sup>24</sup>

In the foreign exchange market, the Indian rupee (INR) appreciated against the US dollar in

**Chart 51: Foreign Direct Investment****Chart 52: Net Foreign Portfolio Investment**

<sup>24</sup> Data on India's external debt and international investment position at end-June 2021 were released on September 30, 2021 on the RBI website.

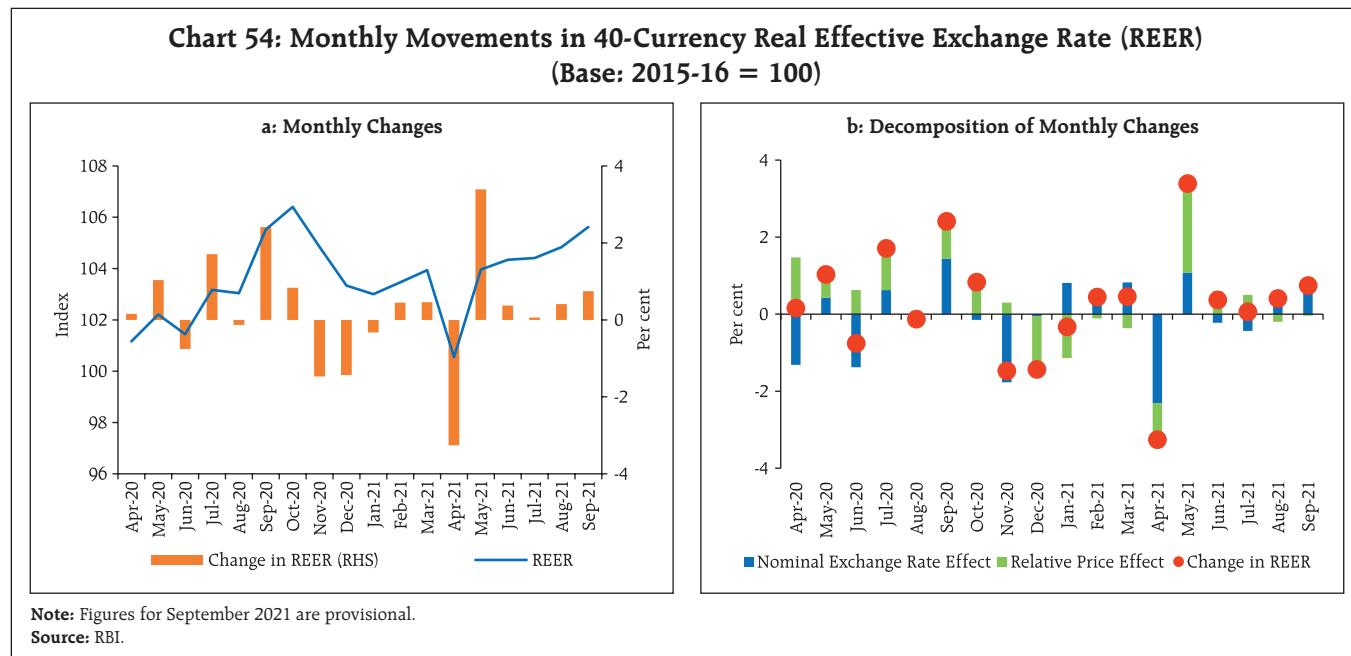


September 2021 by 0.8 per cent (m-o-m) on the back of robust FPI inflows. This was reflected in the movement of the INR in terms of the 40-currency real effective exchange rate (REER) index, which appreciated by 0.7 per cent over its level a month ago (Charts 54a & 54b).

### Payment Systems

Digital payment transactions maintained a steady growth momentum (y-o-y) in September 2021 (Table 6) and October 2021 (up till October 8). Real Time Gross Settlement (RTGS) wholesale transfers posted double-digit growth, both in volume and value terms. In the retail segment, transactions through the National Electronic Funds Transfer (NEFT), the Immediate Payment Service (IMPS), the National Electronic Toll Collection (NETC), and the Bharat Bill Payment System (BBPS) also expanded strongly. Transaction values processed under the Unified Payments Interface (UPI) channel remained resilient and well above the ₹6 lakh crore mark for the third successive month, while volumes scaled a new peak of 365 crore transactions. The number of banks live on the platform has also risen from 174 in September 2020 to 259 in September 2021<sup>25</sup>, attesting to the growing ubiquity of UPI as a payment mode in the digital space.

In line with the goal to review the corridor and charges for inbound cross-border remittances in the



<sup>25</sup> <https://www.npci.org.in/what-we-do/upi/product-statistics>, accessed on October 6, 2021

**Table 6: Growth Rates in Select Payment Systems**

Payment System	Transaction Volume Growth (Y-o-Y, per cent)				Transaction Value Growth (Y-o-Y, per cent)			
	Aug-20	Aug-21	Sep-20	Sep-21	Aug-20	Augt-21	Sep-20	Sep-21
RTGS	-1.7	42.6	13.7	34.2	-36.7	39.4	-14.4	16.7
NEFT	6.0	37.2	13.9	36.1	7.5	14.5	19.5	11.7
UPI	76.3	119.6	88.5	103.1	93.1	114.2	103.8	99.0
IMPS	22.9	54.3	37.0	37.7	24.3	36.2	35.3	30.3
NACH	22.2	-2.3	7.4	-8.6	6.0	21.0	5.2	19.1
NETC	248.6	107.8	279.4	75.9	180.5	79.6	194.5	55.1
BBPS	100.8	177.6	111.3	156.8	106.9	172.5	107.0	206.7

Payment System Vision 2021, the Reserve Bank has decided to link UPI with the PayNow - Singapore's fast payment system - by July 2022. This is aimed at facilitating instant, efficient, and frictionless cross-border payments that can further incentivise trade and investments between the countries. As India is the largest recipient of remittances globally<sup>26</sup>, this linkage can be a breakthrough in the evolution of a robust multi-country payments ecosystem that can potentially spearhead the transition towards 'payments without borders'.

As a measure to streamline customer onboarding and level playing field for non-banks, the Reserve Bank has allowed NBFCs, payment system providers, and payment system participants to apply for Aadhaar e-KYC authentication licence.

On the innovation front, six entities have successfully exited the first cohort on retail payments under the Regulatory Sandbox (RS) scheme for FinTechs, while the test phase has commenced for eight entities in the second cohort on cross-border payments. The Bank has also announced the opening of the third cohort with 'MSME Lending' as its theme.

<sup>26</sup> As per World Bank data, India received \$83 billion in remittances in 2020, registering a drop of 0.2 per cent from last year.

The fact that India has the highest FinTech adoption rate of 87 per cent, as compared with the global average of 64 per cent<sup>27</sup>, underscores the potential of initiatives like RS to devise alternatives that can address credit gaps, drive financial inclusion and further bolster the digital revolution underway.

Under the PM Street Vendor's Atma Nirbhar Nidhi (PM SVANidhi) scheme, the Ministry of Electronics and Information Technology (MeitY) and the Ministry of Housing and Urban Affairs (MoHUA) have recently launched an initiative to increase digital onboarding of street vendors across 223 cities in the country.<sup>28</sup> This is expected to expand the formal credit ecosystem and further the agenda of an inclusive Digital India.

With the festival season in the offing, the digital payment ecosystem is poised for stronger growth on the back of the growing footprint of e-commerce in lower-tier cities and rising awareness about digital modes. Mirroring such optimism, the National Payments Corporation of India (NPCI) expects the UPI to hit transactions worth US\$1 trillion annually.<sup>29</sup>

<sup>27</sup> [https://www.business-standard.com/article/finance/india-has-the-highest-fintech-adoption-rate-of-87-says-fm-sitharaman-121092900710\\_1.html](https://www.business-standard.com/article/finance/india-has-the-highest-fintech-adoption-rate-of-87-says-fm-sitharaman-121092900710_1.html)

<sup>28</sup> <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1753651>

<sup>29</sup> <https://economictimes.indiatimes.com/industry/banking/finance/banking/npci-looks-at-usd-1-trillion-worth-of-transactions-through-upi-on-annual-basis/articleshow/86618478.cms>

## V. Conclusion

Everywhere, resurgent demand is being choked by supply bottlenecks, placing the global recovery at risk. In fact, supply chain disruptions seem to be feeding on one another, amplified simultaneously by decarbonisation drives and trade wars. As people opt out of the workforce, global labour shortages are hamstringing factory output and stalling vital services like transportation. As margins get squeezed and prices get pushed up, elevated levels of inflation with considerable cross-country heterogeneity are reflecting these demand-supply imbalances as well as the intense competition among countries for natural resources and key intermediates – the most recent one being energy. These developments are forcing the hands of central banks and fiscal authorities to scale back their pandemic policies, led by emerging economies, and this is shaping into another headwind to global growth.

The consensus seems to veer around the prognosis that supply gaps and impediments will last at least through the better part of 2022. The fear is that in the interregnum, second-round effects may set in, entrenching inflation while growth suffers stagnation. There is also the possibility of facing an inventory recession when the supply backlogs are eventually cleared. There is an urgency now around speeding up vaccination of the world, but in these evolving configurations, it is becoming increasingly clear that vaccination alone will not boost the global economy. The other factors that are at work need to be addressed by the right mix of policies and coordinated across borders to keep the recovery going.

Already financial markets are sending warning signals - equity prices are wobbling, spooked by the rise in bond yields, and currencies are wilting in the face of the strength of the US dollar. Markets fear that the inevitable rise in interest rates is going to be driven by a rise in inflation rather than a rise in the pace of

growth. Premature tightening could bring about the stagflation that all fear, quashing growth just as the economy is recovering. In an influential view, history is thick with examples of central banks under doing it - underestimating the need for continuing stimulus.<sup>30</sup> Perhaps the need of the hour is not to focus so single-mindedly on normalisation but on supply side reforms to ease the bottlenecks and disruptions, labour shortages and high commodity prices, especially of crude. Climate, infrastructure, digitalisation, education and re-skilling are areas for longer-term investment and supply expansion that have nearer-term demand boosting effects. Meanwhile, financial stability concerns are rising to the fore as markets and financial intermediaries rebalance to calibrate to near-term prospects. Going forward, the focus is likely to be on the normalisation of prudential policies and the strengthening of insolvency frameworks and restructuring mechanisms, including for the overhang of public and private debt.

In this uncertain and volatile global environment, we maintain our view that India crossed a turning point in August-September, as we wrote in the August issue of the State of the Economy. On inflation, the MPC's call has turned out to be correct, with the softer than expected food prices providing the impetus for a further disinflation of the headline to a closer alignment with the target. On the other hand, the economy may be healing but it is still digging out of one of the deepest contractions to hit any major economy during the pandemic – we were among the first hit and our recovery started late, towards October-November 2020. In the second wave, we did not impose a nationwide lockdown, but daily infections at over 400,000 were at that time the highest in the world and it clearly moderated the recovery that was underway till then. Consequently, policy support for a sustained

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<sup>30</sup> Powell, J. (September 29, 2021), ECB forum on Central Banking.

and inclusive recovery may be needed for longer. In particular, the choice of policy mix will need careful consideration and sensitivity as it is expected that employment may weigh on the recovery, with people having lost incomes and jobs, and those that have jobs have lost purchasing power. Already, hiring prospects are brightening ahead of the festivals, with entry level hiring growing at the fastest pace. The IT sector is the leader in terms of the intent to hire, followed by education services, healthcare and pharmaceuticals.

India will need policies that channel these energies to regain the demographic dividend. We can do it - recent outlook upgrades cite India's strong fundamentals, the receding risks of a negative feedback between the real economy and the financial system, high capital cushions and ample liquidity. The time is right for setting India on a new trajectory of sustainable and inclusive growth. After all, October marks the ending and beginning of things, a symphony of permanence and change.

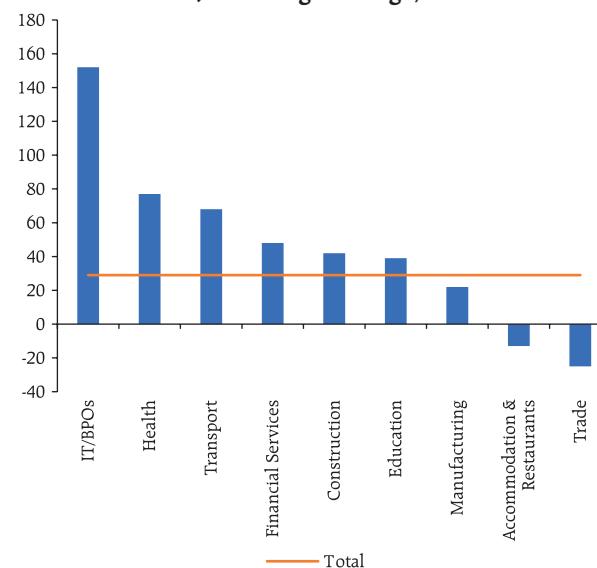
## Annex 1: Quarterly Employment Survey (Contd.)

The Ministry of Labour and Employment on September 27, 2021 released the Quarterly Employment Survey (QES) report on organised sector employment. The scope of the QES is limited to establishments employing 10 or more persons (Organised Segment) as identified by the Sixth Economic Census (2013-14) and covers nine sectors which account for 85 per cent of employment in the organised sector.

Between 2013-14 and 2020-21, organised sector employment increased by 29 per cent, i.e., at an annual average of 4.1 per cent, with the maximum increase occurring in the Information Technology-Business Process Outsourcing sector (Chart 1). Only two sectors, viz., accommodation and restaurants, and trade, witnessed a decline in employment during this period.

The manufacturing sector accounts for 40.6 per cent of employment in the organised sector. However, many labour-intensive sectors like trade and construction have low shares in organised sector employment. A comparison with the Periodic Labour Force Survey (PLFS) Report 2018-19<sup>31</sup>, which provides employment at household level reveals this divergence in sectoral shares, as in the latter, trade and construction have a higher share in employment reflecting the large informal labour force that these sectors employ.

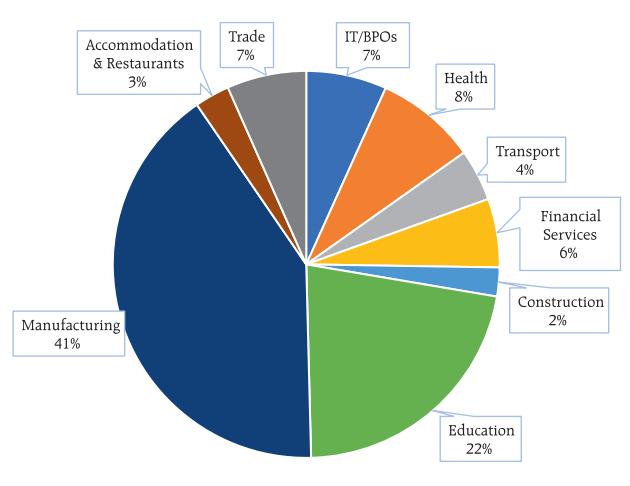
**Chart 1: Organised sector Employment (Percentage Change)**



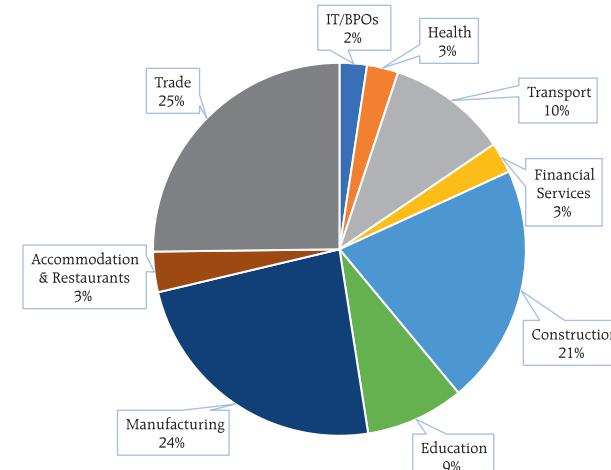
Sources: Ministry of Health and Family Welfare (MoH&FW).

The QES survey also provides information on the loss of employment and wages during the nation-wide lockdown under the first wave of Covid-19. With the exception of health and financial services, operation of all sectors was affected, with only 34 per cent of units operational during March 25, 2020 to June 30, 2020. However, in the case of

**Chart 2a: Organised Sector Employment**

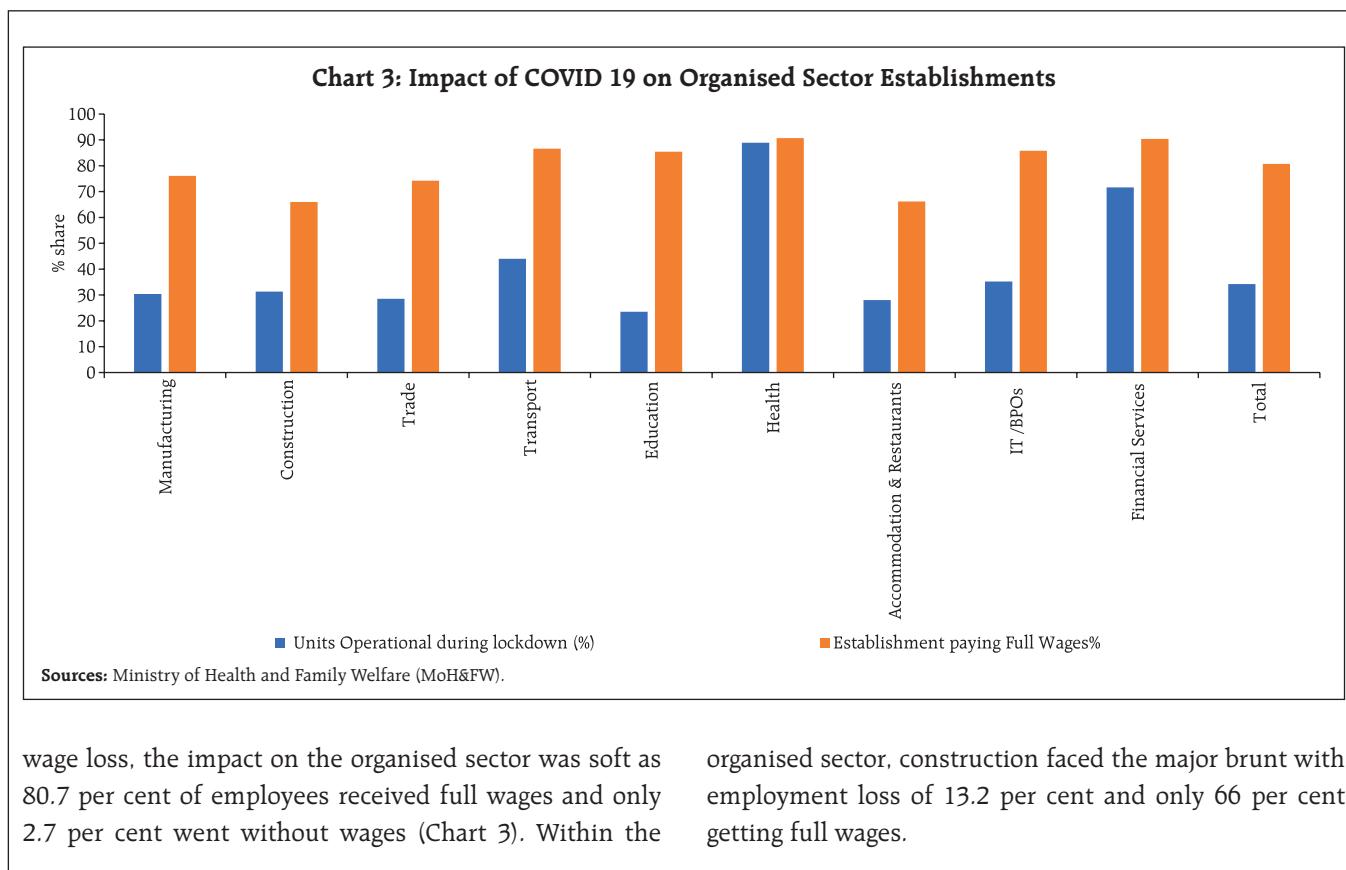


**Chart 2b: Household Level Employment**



<sup>31</sup> For the analysis, employment in only the above nine sectors are taken into consideration. Further, as IT/BPO is not separately given in PLFS, the head Information and Communication is taken in totality.

### Annex 1: Quarterly Employment Survey (*Concl.*)



wage loss, the impact on the organised sector was soft as 80.7 per cent of employees received full wages and only 2.7 per cent went without wages (Chart 3). Within the

organised sector, construction faced the major brunt with employment loss of 13.2 per cent and only 66 per cent getting full wages.



# *Should Financial Stability be a Monetary Policy Goal? Evidence from India\**

*Empirical literature is divided on whether financial stability should be adopted by an inflation targeting central bank as an explicit policy objective. While arguments on both sides permeate, cross-country evidence suggests that there are only a few inflation-targeting central banks committing to such an explicit target, although all of them strive to achieve the financial stability goal. In the Indian context, analysis using vector autoregression (VAR) framework suggests that while monetary policy has been most effective in containing inflation risks, macroprudential policies were efficaciously deployed to contain financial stability concerns. The present article argues that since their inception in early 2000s in India, macroprudential policies have generally complemented monetary policy and it is important to continue with the same approach.*

## I. Introduction

Mainstream economic literature in the pre-global financial crisis (GFC) period agreed that financial stability concerns should not influence monetary policy decisions and macroprudential policies are the best devices to tackle such considerations. Post-GFC, however, plurality of views emerged, and the literature is now far from unanimous on whether financial stability should be pursued as an explicit mandate of monetary policy. The modified Jackson Hole consensus questions the effectiveness of monetary policy instruments for addressing financial imbalances and suggests the use of macroprudential tools instead. On the other hand, the 'lean against the wind' argument professes that macroprudential

policies cannot fully address financial cycles and it is possible to pursue financial stability objective under flexible inflation targeting (FIT) (Borio and Lowe, 2002; Woodford, 2011). Concomitantly, another strand of literature suggests that financial stability is *sine qua non* for price stability as the two objectives are intimately interlinked (Brunnermeier and Sannikov, 2016)<sup>1</sup>. The present article empirically evaluates whether monetary and macroprudential policies in India have worked in tandem to achieve explicit price stability goals while also implicitly addressing the financial stability issues.

The cross-country evidence, based on a select sample, suggests that while almost all central banks implement policies to ensure financial stability, only a few FIT central banks e.g., Bank of Korea, Bank of Thailand (BoT), Bank of Ghana and National Bank of Ukraine specify that as an explicit mandate of monetary policy. The Reserve Bank of India was one of the first central banks to harness macroprudential tools and over the years, it has used them successfully to target build-up of risks arising from cyclical fluctuations in sectoral credit supply, interlinkages across financial institutions and sectors, as also cross-border spill-overs.

In this article, we construct an aggregate macroprudential policy (MPP) index using risk weights and provisioning for standard assets in housing, commercial real estate (CRE), consumer loans and capital market, loan-to-value (LTV) ratio and cash reserve ratio (CRR). A vector autoregression (VAR) analysis using macroeconomic variables for the period June 1997 to March 2020 suggests that monetary policy does exert influence over inflation and business cycles but, at the same time, does not intensely influence financial cycles. Financial cycles are influenced by credit cycles, which in turn are impacted by macroprudential policies. Juxtaposing the MPP

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<sup>1</sup> Details on the three strands in the literature are presented in Section II.

index with the repo rate shows that macroprudential policies in India have moved generally in sync with the monetary policy.

From the empirical analysis, the article concludes that the approach of using monetary and macroprudential policies in a co-ordinated manner with the aim of simultaneously pursuing price and financial stability objectives has served the economy well, even after adoption of FIT. Financial sector reforms are a continuous process, which are implemented incrementally in India. This process, along with effective use of macroprudential tools, is helping in reinforcing the financial stability goal.

The literature in this arena is vast and a bird's eye view of the same is presented in section II, while section III reviews cross-country practices followed by FIT central banks in pursuance of financial stability objective. Section IV explores whether the macroprudential policies have been complementary or contradictory to the monetary policy operations in India. Section V presents data and empirical evidence, while section VI concludes.

## **II. Review of Literature**

Complementarities and conflicts between price stability and financial stability have been a well-researched area in the macro-finance literature. While there is no consensus on the intensity of interaction between these two variables, it is often pointed out that price stability reduces uncertainty and helps in efficient pricing in financial markets (Yellen, 2014; Billi and Vredin, 2014). Similarly, the lack of financial stability can pose hindrance to the effective transmission of monetary policy, impacting price stability (Bordo *et al.*, 2000). On the contrary, several empirical and theoretical studies show that financial imbalances may build up even in a low inflation environment owing to the impact of monetary policy on risk-taking (Blinder, 1999; Borio and Lowe, 2002; Borio, English and Filardo, 2003; and Shirakawa, 2012). The policy debate thus boils down to whether

inflation targeting central banks should explicitly incorporate financial stability objectives.

The narrative of this debate has changed significantly after the GFC of 2008. Prior to the GFC, the mainstream perspective was that considerations of financial stability should play no significant role in the conduct of monetary policy. However, the GFC showed that price stability alone will not ensure financial stability and 'mopping up' after the crisis is not an advisable strategy (Issing, 2017).

### ***Emergence of Three Major Strands***

Three major strands of literature concerning financial stability remit of monetary policy have emerged after the GFC (Smets, 2014). The first one, termed as a *Modified Jackson Hole consensus*, maintained that monetary policy should keep its narrow focus on price stability whereas macroprudential tools should pursue financial stability, with each having separate instruments. It is based on the assessment that the interaction between monetary policy and macroprudential instruments is limited, that the monetary policy stance did not significantly contribute to the building up of imbalances before GFC, and when compared to macroprudential policies, the short-term interest rate is not a very effective instrument to deal with those imbalances (Collard *et al.*, 2017; Adrian *et al.*, 2014).

The second one, termed as the *strategy of leaning against the wind*, acknowledged that financial cycles cannot be fully addressed through macroprudential policies and monetary policy stance may affect risk taking. It, therefore, suggested that central banks should lean aggressively against the growing financial imbalances, if any, rather than merely focusing on the short-term inflation outlook. Considering financial stability as another objective would also imply lengthening of the policy horizon of the monetary authorities, as the financial cycle is typically longer than the business cycle (Borio and Lowe, 2002; Aydin and Volkan, 2011). Literature also suggests that over

and above employing regulatory and supervisory tools and micro and macroprudential policies, inflation targeting frameworks can and should be adapted to account for intermittent disruptions of the kind that occurred during GFC (Woodford, 2011). Along similar lines, it is argued that macroprudential policies are more effective when reinforced by monetary policy (Caruana, 2011; Bruno, Shim and Shin, 2017; Gambacorta and Murcia, 2017).

The third one, which argues that *financial stability is price stability*, suggests drastic changes to the conduct of monetary policy by showing that financial stability and price stability are closely intertwined (Brunnermeier and Sannikov, 2016). It puts financial frictions at the centre of monetary policy transmission mechanism.

The suitability and optimality of the three approaches depends on the empirical evidence on three broad issues: the effectiveness of macroprudential policies; the extent to which monetary policy leads to risk taking; and the likelihood of financial stability mandate undermining the price stability objectives (Smets, 2014).

#### **Inter-linkages between FIT and Financial Stability: Indian Experience**

In the Indian context, while the Reserve Bank used both micro and macroprudential measures to limit the risks to financial stability from asset price cycles, it refrained from using policy interest rates

with the specific intention of influencing asset prices. Empirical evidence established that the monetary policy (which already catered to multiple objectives at that point of time) should not be assigned any explicit role to stabilise asset prices (Singh and Pattanaik, 2012).

Research indicates that financial stability, growth and inflation can share a medium to longer term relationship. Financial stability can promote growth without posing much threat to price stability and can enhance the effectiveness of monetary policy transmission. Further, with financial stability, growth could be more persistent and inflation less persistent. Therefore, financial stability goal can be pursued along with conventional objectives in the Indian context (Dhal, Kumar and Ansari, 2011). Recent evidence suggested that health of the banking system, measured by gross non-performing assets (NPAs) had significant impact on net interest margins (NIMs) and credit growth of commercial banks, implying that deterioration in asset quality impedes monetary policy transmission through the interest rate and credit channel (John et al., 2016; Raj et al., 2020).

#### **III. Financial Stability Mandates of FIT Central Banks**

Historically, with or without being specifically mandated to do so, most central banks implement measures to ensure financial stability in their jurisdictions. Among the FIT central banks, Bank of Korea and BoT have financial stability as explicit mandates of their monetary policies (Table 1). The

**Table 1: Major FIT Countries with Explicit Financial Stability Mandate of Monetary Policy**

Central Bank	Monetary Policy Objective	Institutional Structure for Financial Stability
Bank of Korea	Maintain financial stability while pursuing price stability	Monetary Policy Board takes decision on maintaining financial stability.
Bank of Thailand (BoT)	Price stability alongside preserving economic growth and financial stability	Financial Institutions Policy Committee (FIPC), headed by the Governor, is responsible for setting prudential policy, regulations and supervisory practices to ensure safety and soundness of financial institutions.  BoT formulates policies and regulations after analytical studies and industry hearings. Further, Policies are also subject to scrutiny by the FIPC. Deputy Governor-in-charge of monetary stability (part of Monetary Policy Committee) is also part of the FIPC.

**Note:** Ghana and Ukraine are two more examples where financial stability is an explicit mandate of monetary policy. However, for sake of brevity, the two are not covered here.

**Source:** Compiled from websites of respective central banks.

South Korean law specifies that, for the national economy to achieve stable growth, it should be supported not only by price stability, but also by financial stability. The BoT has been targeting inflation since the turn of the century. Its statute relating to central bank objective was, however, amended in 2008 as a policy response to the east Asian financial crisis to specify stability of the financial system and payments system along with monetary stability as explicit mandates. Additionally, in 2020, BoT adopted a target range (1-3 per cent), replacing their earlier point target with a tolerance band (2.5 +/- 1.5 per cent). It is believed that the adoption of target range (*i.e.*, without midpoint) helps enhance monetary policy flexibility in supporting growth and preserving financial stability more effectively under volatile and uncertain circumstances.

A few commonalities emerge between the practices followed by FIT central banks to ensure financial stability. All of them have well-developed stress testing frameworks and publish Financial Stability Reports or Reviews at regular intervals. Macroprudential regulation has become a part of the toolkit for many countries, while monitoring financial conditions, co-ordination with other regulators, overseeing financial infrastructure are other such measures. Some central banks, such as the Reserve Bank of New Zealand, also factor-in climate change in their strategies to maintain financial stability.

During times of crisis, these central banks ensure financial stability by bailing out solvent but illiquid market players, managing failed financial institutions, enhancing overall liquidity to avoid spillover effects and reducing yield curve volatility, among others.

However, the implementation structure to ensure financial stability differs across FIT jurisdictions (Annex A). In majority of the cases, the existence of a separate board or committee for maintaining

financial stability is prevalent, which is mostly headed by governors of the respective central banks. These institutions act as coordinating bodies for regulatory agencies, while helping them to make decisions aimed at promoting the stability of the financial system. Alternatively, in Japan, the authority entrusted with setting monetary policy also votes on asset purchases to influence asset risk premia.

#### **IV. Macropredential Policy and Monetary Policy in India**

The Reserve Bank has used an entire gamut of macroprudential tools<sup>2</sup> for more than a decade without christening them so and was one of the first central banks to adopt these measures. Macroprudential tools are used to target the build-up of risks arising from (i) cyclical fluctuations in the credit supply; (ii) interdependence across financial institutions and sectors; and (iii) cross-border spill-overs.

Countercyclical measures like pre-emptive countercyclical provisioning and differentiated risk weights across sectors can be used to gauge the direction of macroprudential policies for comparing them with the monetary policy stance of the period. Monetary policy was in tightening phase to contain the demand pressures when the macroprudential measures were first introduced in 2004 and the repo rate was raised by 300 basis points till August 2008. During the same period, provisioning on standard

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<sup>2</sup> These include counter-cyclical measures like loan-to-value caps, capital conservation buffers, counter-cyclical buffers, and, investment fluctuation reserves. Limits on aggregate interbank liabilities, restricted access to un-collateralised funding market, and limits on cross holding of capital amongst banks / financial institutions are examples of cross-sectional tools to check the spread of financial instability across sectors. On the other hand, measures that reduce financial stability risks caused by capital flow volatility, particularly those which amplify foreign currency risks or liquidity mismatch risks, including sector-specific caps, domestic entity-specific caps and restrictions on external commercial borrowings have been gradually liberalised over the years.

assets on housing loans and commercial real estate were raised by 75 basis points and 175 basis points, respectively (Annex B). Moreover, risk weights on various segments were also raised. Further, during the easing phase of October 2008 - April 2009, policy rates, risk weights and provisioning norms in various segments were loosened. The stance reversed after October 2009, when inflationary pressures warranted monetary tightening, while increased credit growth in some segments of the economy necessitated macroprudential tightening. Most of the later tightening and loosening phases of monetary policy were in sync with macroprudential policy.

Since the introduction of FIT, macroprudential tools have not been used aggressively due to subdued credit conditions. The monetary easing phase from January 2015 to May 2018 was followed by a short phase of monetary tightening. In the subsequent monetary easing phase from February 2019 till date, while the policy rate was reduced by 250 basis points, the risk weights of certain sectors were also adjusted accordingly.

In the Indian case, both monetary policy and macroprudential policy complement each other. This has been demonstrated by a coordinated approach to the conduct of monetary and macroprudential policies with the aim of simultaneously pursuing price and financial stability. Such coordinated responses were facilitated by the Reserve Bank's wide regulatory ambit. Policies such as higher provisioning to CRE and housing sector were able to curb the disproportionate increase in sectoral credit without jeopardising or disrupting the flow of credit to other productive areas and priority sectors. The Indian experience, so far, has demonstrated broad cohesion between financial stability and price stability.

## V. Empirical Analysis

### **Data and Methodology**

In the present section, the interactions between monetary policy, business cycles, financial cycles / credit cycles and macroprudential policies in the Indian context are analysed, following the works of Bernanke and Blinder (1992), Peersman and Smets (2001) and Miyao (2002), among others. The VAR is a popular technique to estimate these types of interactions consisting of all endogenous variables. It comprises one equation per variable where the right-hand side of each equation includes a constant and lags of all other variables in the system. Two reduced form VAR models are constructed with common lag-length. The first one is a four-variable model comprising real GDP growth, CPI inflation, call money rate, financial cycle / credit cycle. The second model additionally includes the MPP index<sup>3</sup>. While the former is intended to examine the monetary policy transmission mechanism, the latter has been undertaken to gain insights into the policy debate of whether macroprudential policies are effective in influencing credit growth.

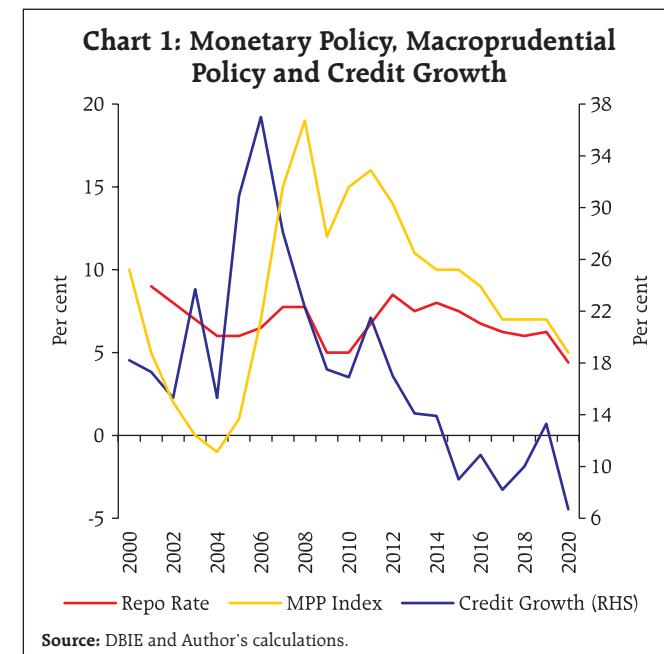
The time period considered for the analysis is June 1997 to March 2020 at a quarterly frequency, covering two monetary policy regimes, *i.e.*, the multiple indicators approach (1997-2016) and the flexible inflation targeting (2016-2020). The growth in real GDP, CPI inflation, call money rate and credit growth of scheduled commercial banks (SCBs) (excluding regional rural banks) are treated with asymmetric band pass filters to create proxies for business cycle, price cycle, monetary policy cycle and credit cycle,

<sup>3</sup> Data on credit, credit to GDP ratio, term spread, and call money rate are sourced from <https://dbie.rbi.org.in> while that of GDP and CPI inflation are taken from Ministry of Statistics and Programme Implementation ([www.mospi.gov.in](http://mospi.gov.in)). The MPP index is based on Bank for International Settlements (BIS) data and various circulars of the Reserve Bank of India.

respectively. Financial cycle is constructed as an average of normalised values of term spread, credit to GDP ratio, corporate bond spread and equity return volatility for the purpose of this analysis.

To examine the general trend in macroprudential policies, an aggregate qualitative MPP index was constructed at quarterly frequency using risk weights and provisioning for standard assets for housing, CRE, consumer loans, capital market, LTV ratio and CRR. The methodology for construction of MPP index is based on Akinci and Olmstead-Rumsey (2018). The first step to derive the aggregate MPP index was to construct individual indices for each of these macroprudential measures. Starting with zero in the base year 1999-2000 (designated as 2000 in Chart 1), a value of one was added to the index if any macroprudential measure was introduced or tightened to contain credit or asset price growth. Similarly, a value of one was subtracted if the macroprudential measures were loosened. If the macroprudential measure was tightened or relaxed multiple times during the year, one was added or subtracted as many times. If no action was taken in a year, there was no change in the value of the index. Thus, by construction, tightening of macroprudential measures would indicate a higher value of the index and *vice versa*<sup>4</sup>. In the final stage, these individual indices were aggregated horizontally to construct the MPP index, which was scaled up by 10 to remove negative values.

A visual analysis of the MPP index reveals that the macroprudential policy has generally moved in sync with the monetary policy in India. The contractionary effect of tighter macroprudential policies on credit growth is visible with a lag. However, ability to uplift credit growth through macroprudential policies during downturns has been limited (Chart 1). Thus,



their effectiveness in various phases of the credit cycle have been found to be asymmetric. This suggests that reviving the depressed credit cycle requires some more innovative policy instruments.

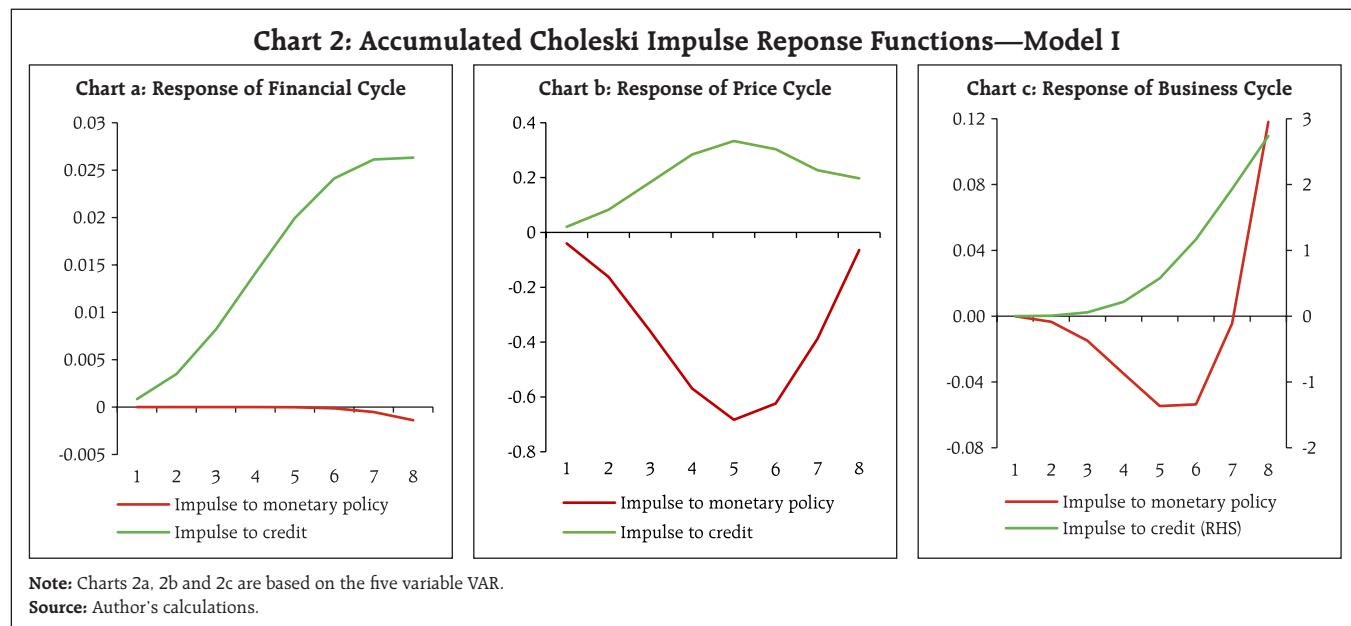
### Results and Inferences

As a preliminary step, we check for the presence of unit roots in the variables using the Augmented Dickey Fuller test and find that they are stationary, either at level or in first difference. The Granger causality tests reveal that the null hypothesis of no causality is almost always rejected with only two exceptions (Annex C). The presence of such bi-directional causalities may suggest prevalence of inter-linkages between the variables under consideration<sup>5</sup>.

In the VAR framework, impulse response functions are used to trace the responses of a system's variables to the system's shocks. We analyse the accumulated Choleski impulse responses of two

<sup>4</sup> The variables used for MPP index are not intensity adjusted. For instance, a decrease in the maximum LTV ratio by 10 percentage points and a decrease in the ratio by 20 percentage points are treated equally in the MPP Index.

<sup>5</sup> However, these results need to be analysed with some caution as Granger causality test cannot, in its simplest form, detect instantaneous causality. The test may also yield spurious results if both variables respond to a common shock, but their responses are staggered.

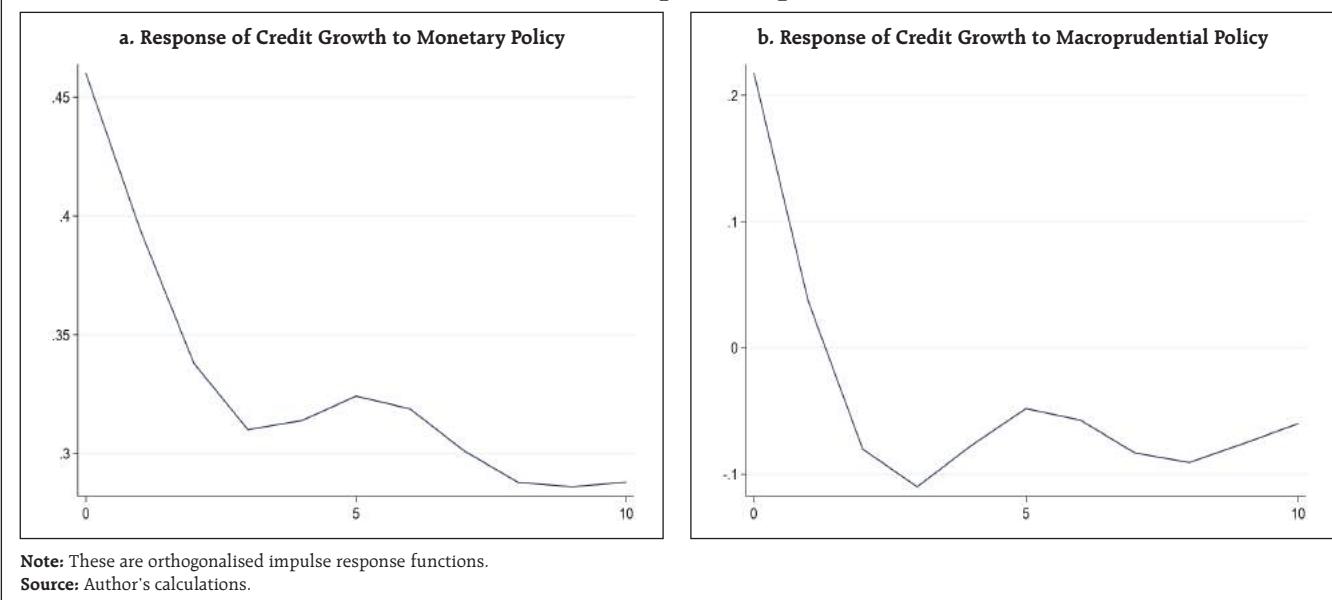


VAR models discussed above to assess the impact of monetary policy and credit growth on other variables, viz., output, prices and financial cycle (Model I) and MPP on credit growth (Model II) over the short and medium-term horizons. The impulse responses suggest that financial cycle is sensitive to credit shocks, whereas it may not be impacted by monetary policy immediately. In the long run though, the financial cycle could be influenced by the monetary policy through credit cycle channel (Chart 2a). Change in monetary policy affects inflation, i.e., a unit positive shock to monetary policy pulls down the CPI inflation and it takes a few quarters for it to retrace. A positive credit shock, on the contrary, leads to an uptick in inflation, as expected (Chart 2b). A positive shock to monetary policy initially increases costs of finance, thereby causing downturn in business cycle in the short term, before it starts recovering. The impact of credit growth on business cycle (on right hand scale) is that of gradual increase (Chart 2c).

The impulse response of aggregate credit growth to tightened macroprudential measures, as indicated by a positive shock to MPP index, is negative for

up to three periods. These policies are found to be more effective than monetary policy in restraining excessive credit growth, as monetary policy makes an impact indirectly through the credit channel, while macroprudential policy impacts credit flow directly (Chart 3a & b).

Two important inferences come out of the above analysis. First, a positive shock to monetary policy has not been influential in taming the financial cycle. This finding is in line with the argument that short-term interest rate is probably not the best tool to achieve financial stability (Svensson, 2012; Yellen, 2014; Evans, 2014; and Adrian et al., 2018). Second, macroprudential policies have been successful in containing credit exuberance, and through that, in ensuring financial stability. This finding is consistent with Verma (2018), who documented effectiveness of macroprudential policies in curtailing credit growth in sensitive sectors. In sum, the empirical evidence justifies the current framework of employing monetary policy primarily for price stability and macroprudential policies for financial stability. As has been observed, the sync between monetary policy stance and macroprudential policies seems to

**Chart 3: Accumulated Choleski Impulse Response Functions – Model II**

have helped the latter in effectively containing credit booms<sup>6</sup>.

## VI. Conclusions

In India, financial stability is an implicit goal of the central bank, which harnesses the benefits of intimate interaction between the monetary and macroprudential policies conducted under one roof. Against the backdrop of the recent review of inflation targeting regime in India, this article empirically establishes that this collaborative approach has served well. Constructing an index of macroprudential measures, evidence presented in this article suggests that macroprudential measures taken by the Reserve Bank were effective in restraining excessive credit growth during 2004-2011. At the same time, it has not demonstrated any major conflict between stance on financial stability, price stability and growth objective so far. Rather, most of the time, monetary policy and macroprudential tools have been found to be complementary to each other.

The present FIT regime in India envisages policy action to ensure price stability, 'while being mindful of the growth objective'. The empirical results show that through a proper co-ordination between monetary and macroprudential policies, the financial stability goals are implicitly met under the FIT regime without diluting the inflation targeting objective. Moreover, narrowly defining financial stability or absence thereof is difficult. Setting a financial stability objective for monetary policy, on top of already existing price and growth considerations, may be akin to going back to the earlier multiple indicators approach, which may seriously affect the price stability objective. It is, therefore, important to continue with the existing framework.

## References

Adrian, T., Covitz, D., & Liang, N. (2014). Financial Stability Monitoring. *Federal Reserve Bank of New York Staff Reports*, June.

Adrian, T., Dell'Ariccia, G., Haksar, V., & Mancini-Griffoli, T. (2018). Monetary Policy and Financial Stability. In *Advancing the frontiers of monetary policy* (pp. 69-82). Washington, D.C.: IMF.

<sup>6</sup> One interesting extension of this analysis could be to test whether these relationships have changed in the post-FIT period as compared with the earlier regime. This, however, could not be done for two reasons: first, limitation of data points since the adoption of FIT in 2016; second, as mentioned earlier, the macroprudential policies have not been used aggressively in the post-FIT period.

- Akinci, O. & Olmstead-Rumsey, J. (2018). How effective are macroprudential policies? An empirical investigation. *Journal of Financial Intermediation*, 33(C), pp. 33-57
- Aydin, B., & Volkan, M. E. (2011). Incorporating financial stability in inflation targeting frameworks. *IMF working paper WP/11/224*. International Monetary Fund.
- Bernanke, B., & Blinder, A. (1992). The Federal Funds Rate and the Channels of Monetary Transmission. *American Economic Review*, 82 (4).
- Billi, R. M., & Vredin, A. (2014). Monetary policy and financial stability – a simple story. *Sveriges Riksbank Economic Review*, pp. 7-22.
- Blinder, A. (1999). General discussion: monetary policy and asset price volatility. *Federal Reserve Bank of Kansas City Economic Review*, 4, pp. 139-140.
- Bordo, M. D., Dueker, M. J., & Wheelock, D. C. (2000). Inflation shocks and financial distress: an historical analysis. *Journal of Economic History*, 534-535.
- Borio, C., & Lowe, P. (2002). Asset prices, financial and monetary stability: Exploring the nexus. *BIS Working Papers*. BIS, July.
- Borio, C., English, W., & Filardo, A. (2003). A tale of two perspectives: old or new challenges for monetary policy? . *BIS Working Papers No 127*. BIS, February.
- Brunnermeier, M. K., & Sannikov, Y. (2016). The I Theory of Money. *NBER Working Paper Series*. NBER, August.
- Brunoa, V., Shimb, I., & Shin, H. S. (2017). Comparative assessment of macroprudential policies. *Journal of Financial Stability*, 183-202.
- Caruana, J. (2011). Monetary Policy in a World with Macroprudential Policy. *RBI Monthly Bulletin*, July.
- Collard, F., Dellas, H., Diba, B., & Loisel, O. (2017). Optimal Monetary and Prudential Policies. *American Economic Journal: Macroeconomics*, 40-87.
- Dhal, S., Kumar, P., & Ansari, J. (2011). Financial Stability, Economic Growth, Inflation and Monetary Policy Linkages in India: An Empirical Reflection. *Reserve Bank of India Occasional Papers*.
- Evans, C. L. (2014). Thoughts on accommodative monetary policy, inflation and financial instability. *Speech in Hong Kong*. Federal Reserve Bank of Chicago, March 28.
- Gambacorta, L., & Murcia, A. (2017). The impact of macroprudential policies and their interaction with monetary policy: an empirical analysis using credit registry data. *BIS Working Papers*. BIS, May.
- Issing, O. (2017). Financial Stability and the ECB's monetary policy strategy . *ECB Legal Conference 2017* (pp. 340-348). European Central Bank.
- John, J., Mitra, A. K., Raj, J., & Rath, D. P. (2016). Asset Quality and Monetary Transmission in India. *Reserve Bank of India Occasional Papers*.
- Miyao, R. (2002). The effects of monetary policy in Japan. *Journal of Money, Credit and Banking*, 376-392.
- Peersman, G., & Smets, F. (2001). The monetary transmission mechanism in the euro area: more evidence from VAR analysis. *ECB Working Paper*, No. 91. ECB, December.
- Raj, J., Rath, D. P., Mitra, P., & John, J. (2020). Asset Quality and Credit Channel of Monetary Policy Transmission in India: Some Evidence from Bank-level Data. *RBI Working Paper No. 14/2020*.
- Shirakawa, M. (2012). Retrieved from www.lse.ac.uk: [https://www.lse.ac.uk/assets/richmedia/channels/publicLecturesAndEvents/transcripts/20120110\\_1830\\_deleveragingAndGrowth\\_tr.pdf](https://www.lse.ac.uk/assets/richmedia/channels/publicLecturesAndEvents/transcripts/20120110_1830_deleveragingAndGrowth_tr.pdf), January 10
- Singh, B., & Pattanaik, S. (2012). Monetary Policy and Asset Price Interactions in India: Should Financial Stability Concerns from Asset Prices be Addressed Through Monetary Policy? *Journal of Economic Integration*, 167-194.

Sinha, A. (2011). Macroprudential policies: Indian experience. *Address delivered at Eleventh Annual International Seminar on Policy Challenges for the Financial Sector co-hosted by The Board of Governors of the Federal Reserve System, IMF and the World Bank*. Washington, DC, June 2.

Smets, F. (2014). Financial Stability and Monetary Policy: How Closely Interlinked? *International Journal of Central Banking*, 263-300.

Svensson, L. E. (2012). The Relation between Monetary Policy and Financial Policy. *International Journal of Central Banking*, 293-295.

Verma, R. (2018). Effectiveness of Macroprudential Policies in India. In J. Ansari, *Macroprudential Policies in SEACEN Economies: An Integrative Report* (pp. 31-54). The SEACEN Centre.

Woodford, M. (2011). *Inflation Targeting and Financial Stability*. November 10. Retrieved from <http://www.columbia.edu/~mw2230/ITFinStab.pdf>

Yellen, J. L. (2014). <https://www.federalreserve.gov/newsevents/speech/yellen20140702a.htm>, July 2. Retrieved from <https://www.federalreserve.gov/newsevents/speech/yellen20140702a.htm>

**Annex A: FIT Countries with Financial Stability as Central Bank Mandate**

Central Bank	Central Bank Mandate	Institutional Structure for Financial Stability
Reserve Bank of Australia (RBA)	Setting interest rate to ensure stability of currency, maintaining full employment, economic prosperity, financial stability	Council of Financial Regulators (CFR), chaired by the Governor, ensures co-ordination between the RBA, the Australian Prudential Regulatory Authority (APRA), the Treasury and the Australian Securities and Investments Commission (ASIC). Assistant Governor of RBA is also a member. The Payments System Board within RBA has explicit authority for payments system safety and stability.
Banco Central Do Brasil (BCB)	Purchasing power stability of the domestic currency and the soundness and efficiency of the national financial system.	Members of the Financial Stability Committee (Comef) are Board of Directors of the BCB, who meet on a quarterly basis when Comef also decides on the countercyclical capital buffer rate.
South African Reserve Bank (SARB)	Price stability in the interest of balanced and sustainable economic growth. Mandate revised to include responsibility for financial stability.	Internal Financial Stability Committee headed by the Governor as Chairperson—also includes the Deputy Governors, all members of the Monetary Policy Committee and a maximum of seven other SARB officials. Committee meets every second month, alternate to the MPC meetings.
Bank of England	Stable and low inflation, maintaining financial stability	Financial Policy Committee (FPC) has 13 members- 6 internal (including Governor, 4 DGs and ED responsible for financial stability) and external (academics and business people), which meets four times a year. It is responsible for macroprudential policies and has the power to direct regulators and make recommendations to anyone to reduce risks to financial stability. Prudential Regulation Authority (PRA) - responsible for prudential regulation and supervision of banks, building societies, credit unions, investment firms and insurance companies.
Bank of Japan	Price stability and contributing to financial system stability	Policy Board, consisting of Governor, two Deputy Governors, and six other members decides on-site examination policy, asset purchases, among others.

**Source:** Compiled from Central Banks' websites.

**Annex B: Monetary Policy Stance and Macroprudential Policies of the Reserve Bank of India**

(Changes in basis points)

	Monetary tightening	Monetary easing	Monetary tightening	Monetary easing	Monetary tightening	Monetary easing	Monetary tightening	Monetary easing
	September 2004 - August 2008	October 2008 - April 2009	October 2009 - October 2011	January 2012 - June 2013	July 2013 - January 2014	January 2015 - May 2018	June 2018 - January 2019	February 2019 - September 2021
<b>Monetary measures</b>								
<b>Repo rate</b>	300	-425	375	-125	75	-200	50	-250
<b>Reserve repo rate</b>	125	-275	425	-125	75	-125	50	-290
<b>Cash reserve ratio</b>	450	-400	100	-150	0	0	0	-100
<b>Provisioning Norms</b>								
<b>Capital market exposures</b>	175	-160	-	-	-	-	-	-
<b>Housing loans</b>	75	-60	160	-160		-15	-	-
<b>Other retail loans</b>	175	-160	-	-	-	-	-	-
<b>Commercial real estate loans</b>	175	-160	60	-25 (for CRE-RH)		-	-	-
<b>Non-deposit taking systemically important non-financial companies</b>	175	-160	-	-	-	-	-	-
<b>Risk Weights</b>								
<b>Capital market exposures</b>	25	-	-	-	-	-	-	-
<b>Housing loans</b>	-25 to 25	-	0-50	0 to -50		0 to -25	-	-
<b>Other retail loans</b>	25	-	-	-	-	-	-	-25
<b>Commercial real estate loans</b>	50	-50	-	-25 (for CRE-RH)		-	-	-
<b>Non-deposit taking systemically important non-financial companies</b>	25	-25	-	-	-	-	-	As per ratings assigned by rating agencies

**Source:** Reserve Bank of India and Sinha (2011).

**Annex C: Granger Causality Tests**

Sample (1997-98 Q1 to 2019-20 Q4)		
Null Hypothesis	F statistic	p value
Credit growth does not Granger cause business cycle	6.07	$3*10^{-4}$
Business cycle does not Granger cause credit growth	6.61	$1*10^{-4}$
Financial cycle does not Granger cause business cycle	2.51	0.06
Business cycle does not Granger cause financial cycle	6.83	$9*10^{-5}$
Monetary cycle does not Granger cause business cycle	0.65	0.03
Business cycle does not Granger cause monetary cycle	10.91	$4*10^{-7}$
Price cycle does not Granger cause business cycle	2.54	0.05
Business cycle does not Granger cause price cycle	2.01	0.10
Financial cycle does not Granger cause credit growth	4.31	$3*10^{-3}$
Credit growth does not Granger cause financial cycle	7.36	$4*10^{-5}$
Monetary cycle does not Granger cause credit growth	7.71	$3*10^{-5}$
Credit growth does not Granger cause monetary cycle	6.13	$2*10^{-4}$
Price cycle does not Granger cause credit growth	2.74	0.05
Credit growth does not Granger cause price cycle	4.17	$4*10^{-3}$
Monetary cycle does not Granger cause financial cycle	3.17	0.04
Financial cycle does not Granger cause monetary cycle	4.08	$2*10^{-4}$
Price cycle does not Granger cause financial cycle	9.16	$4*10^{-3}$
Financial cycle does not Granger cause price cycle	6.10	$2*10^{-3}$
Price cycle does not Granger cause monetary cycle	7.59	$3*10^{-5}$
Monetary cycle does not Granger cause price cycle	3.48	0.01

**Note:** Lag length of 4 selected based on Akaike Information Criterion.

**Source:** Authors' calculations.



## ***Return on Physical Capital: Insights from Firm Level Data\****

*The article explores the patterns in return on physical capital (RoPC) in manufacturing sector using the firm level Annual Survey of Industries (ASI) data for 2017-18. The aggregate RoPC is estimated at 19.5 per cent which seems comparable to the returns observed in other developing countries. The government (public) firms showed marginally higher returns than their non-government (public) counterparts. However, the average return of Non-Government (private) entities is significantly higher than Government (private). Amongst the regions, the north-east outperforms others primarily due to Pharma industry in Sikkim and Petroleum industry in Assam.*

### **I. Introduction**

A key factor which spurs value creation and capital accumulation in manufacturing is the return on assets *vis-à-vis* the weighted average cost of capital (WACC). However, in reality, firms hold cash and cash equivalents to tide over financing constraints rather than investing in productive assets. In that case, it makes sense to exclude liquid assets from the total assets and focus on the return on fixed assets/physical capital for estimating the marginal product of capital (Sharma *et al.*, 2019). Return on physical capital (RoPC) is an important variable which is factored in by firms while deciding the level of capital to be deployed in production. It is akin to a barometer which helps firms to ascertain whether they are over or under investing. Over-investment depresses the returns and if it falls below the cost of capital, the firm destroys value. At the same time, high returns signal the capital

market to allocate more capital to that sector thereby enhancing value. According to McKinsey (2020) report, nearly 700 of the top 1,000 manufacturers in India produced returns to capital that were less than their cost of capital in 2018, thereby destroying value. In contrast, the sectors that generated healthier returns saw rise in capital investment during the four years from 2016 to 2019.

In the neoclassical framework, the marginal product of capital would be equalised in equilibrium. However, in the real world many frictions exist which impede the free flow of capital. It has been found that different attributes of firms affect RoPC. The ownership pattern is often cited as one of the major factors which affect the RoPC of a firm. Overwhelming evidence suggests that private firms are more efficient than public firms (Arocena & Oliveros, 2012; Megginson & Netter, 2001; OECD, 2003, p35). Also, the performance of a firm generally improves with higher degree of private ownership. Apart from the ownership pattern of the firms, evidence suggests that age also affects RoPC. There is abundant literature on the variation of RoPC of firms with age stressing the role of Economic Darwinism<sup>1</sup> and intangible capital<sup>2</sup>. Consequently, the RoPC of older firms is expected to be higher than younger firms. After a threshold, firms enter into a phase of terminal decline with diminishing RoPC and eventually cease to exist.

The effect of size of the firm on RoPC has been discussed extensively in the literature and the results of these studies have been mixed (Tybout, 2000; Idson and Oi, 1999; Beck *et al.*, 2005). This study also attempts to investigate the relationship between the size of the firm and its RoPC.

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<sup>1</sup> Economic Darwinism refers to the theory of survival of the fittest firm in a competitive landscape. Stronger firms survive while the weaker ones cease to exist.

<sup>2</sup> Intangible assets include, *inter alia*, copyrights, trademarks, patents, etc.

Regional variation in RoPC can have far reaching consequences on the flow of resources. Neo-classical theory predicts that capital will flow to hitherto low-income regions where RoPC is high owing to low capital intensity. Nonetheless, if developed regions exhibit high RoPC, inequality across regions may worsen further. On similar lines, efficient markets should channelise the capital from low-return to high-return manufacturing activities which is also investigated in this article.

For our analyses, we use firm level data for the year 2017-18 published by Annual Survey of Industries (ASI), which is the principal source of industrial statistics for formal manufacturing sector in India. To the best of our knowledge, this is the first paper to examine the different attributes of firms and their relationship with RoPC using firm level ASI data.

The rest of the article is divided into 5 sections. Section 2 reviews the literature related to survey findings on firm-level data. We discuss the nuances of data in Section 3 followed by methodology for our analysis in Section 4. Results are presented in Section 5. Finally, Section 6 lays out concluding remarks and policy implications.

## **II. Literature Review**

In a cross-country analysis of return on capital (RoC), India's RoC (measured as ratio of share of capital and capital to output ratio) averaged at 18.6 per cent through 1995-2007 period close to the level found in other emerging countries (18.1 per cent). However, India's RoC was significantly higher than those of highly developed and transition economies which were at 12.8 and 10.8 per cent, respectively (Nan-Ting *et al.*, 2015). In another study, the firm-level mean return on assets (ROA) for India was estimated at 11.3 per cent for the period 1997-2014. In perspective, the average returns for developing and developed countries were found to be 10.8 and 7.8 per cent,

respectively (Chari A *et al.*, 2020). ROA (calculated as the ratio of EBIDTA<sup>3</sup> to market value of assets of the firm) was used as a measure of the marginal product of capital. The dollar weighted return in US dollars and local currency has been estimated for India to be around 13.9 per cent in local currency as against that of the average return of 12.4 and 8.3 per cent for developing countries and developed countries respectively (Lingxia *et al.*, 2019).

In the international context, a study on China shows that return on physical capital has decreased from 1998 levels but is still comparable to the rest of the world, even though the investment rates have been high in China. The aggregate returns hovered around 20 per cent in 2005 (Bai *et al.*, 2006). In Ethiopia, there is a higher annual median return to capital in the informal sector (52–140 per cent) than the formal sector (15–21 per cent (Siba, 2015)). On similar lines, a study of formal manufacturing sector of five African countries showed the annual median return to be around 22 per cent (Bigsten *et al.*, 2000).

Taking into cognizance the wide variation in RoPC, many studies have investigated into the factors responsible. Many studies have reported that the financial performance of the firms improves as they grow old due to accumulation of intangible capital like organisational capital, R&D stocks etc., with time (Atkeson and Kehoe 2005; Hsieh and Klenow 2014). 'Economic Darwinism' is another channel which facilitates this process where the inefficient firms are forced to exit and only the efficient firms grow old (Jovanovic, 1982). This leads to improvement in returns on capital for older cohorts owing to survival bias. Another important factor that has a profound effect on performance of firms is the type of ownership. Ownership structures have been extensively

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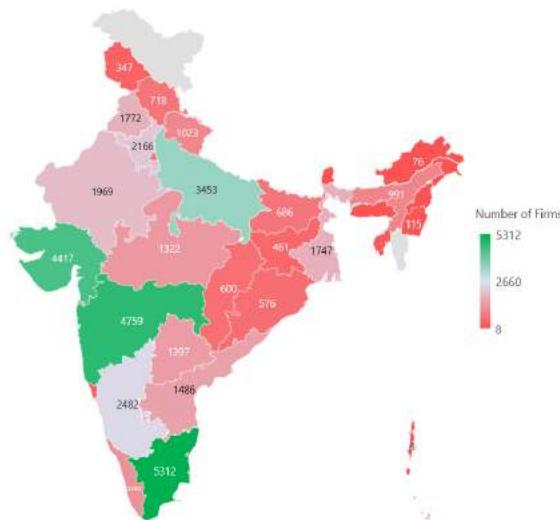
<sup>3</sup> Earnings before interest, taxes, depreciation and amortisation.

debated in the literature and post great depression, government ownership was overwhelmingly favoured against the *laissez faire*. However, with the mounting evidence of the failure of state-owned enterprises across the world, there emerged a palpable impetus for privatisation. In the process, many different types of ownership structures with varying degrees of private ownership emerged. There is ample literature pointing towards improved efficiency on account of privatisation subject to additional factors (UNDP, 2015; Mathur, 2007; Gupta, 2005; Djanko, 2002; Frydman, 1999). As regards impact of firm size on RoPC, academic literature is divided. The argument that the returns should increase with the size of the firm is due to economies of scale. Many studies have found a positive relation between firm size and its performance (Doğan, 2013; Asimakopoulos et al., 2009; Lee, 2009; Alsawalhah, 2012; Akbas, 2012; Ghafoorifard et al., 2014; Kipesha, 2013; Enofe, 2013; Vijayakumar and Tamizhselvan, 2010; Pervan and Višić, 2012). However, some studies have found contrary results (Becker et al., 2010; Salawu, et al., 2012; Banchuenvijit, 2012).

### III. Data

ASI data consist of manufacturing firms in the formal sector that are registered under the Factories Act 1948 i.e., which employ more than 20 persons in firms with power and 40 persons for firms operating without power. In this study, we consider the latest firm level ASI data which is available for year 2017-18. The National Statistical Office (NSO) publishes firm level data organised across 14 blocks (A to N) (Annex A1). The processed dataset obtained after joining all the blocks consists of around 41,400 firms from all over India (See Chart 1). After gross value addition (GVA) calculations on this subset, all factories barring

**Chart 1: Regional Distribution of Firms Participating in ASI Survey**

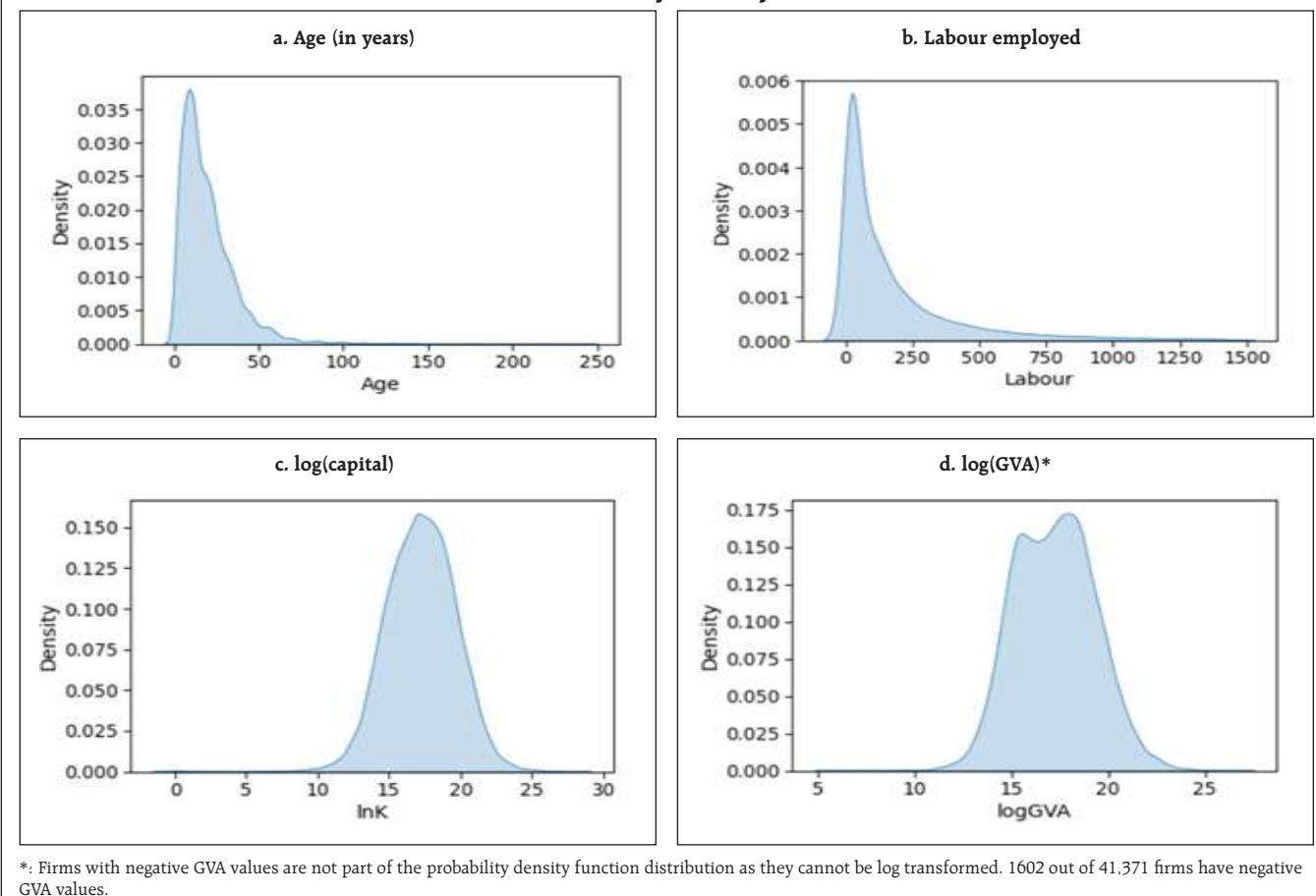


Source: ASI data; Authors' calculations.

around 1600 entities were found to have positive GVA<sup>4</sup>. Fifty-five per cent of the firms were found to be located in urban areas while the rest were in rural hinterlands. Following the new limits on turnover and investment in plant and machinery as advised in MSME Act 2020, we also classify the firms into Micro, Small, Medium and Large categories. We find the dataset to be a heterogeneous mix of factories with number of firms ranging between 4700 to 15600 in each category.

The locations of the firms are also classified into regions for a zonal analysis. The dataset is a mix of old and new firms with varying labour, capital and turnover (See Chart 2). As the capital and GVA variables range over a wide spectrum, it necessitates a logarithmic transformation to render a meaningful probability density function.

<sup>4</sup> The method of calculating GVA from the raw data spread across several blocks is given in the ASI Instruction Manual.

**Chart 2: Probability Density Functions**

#### IV. Methodology

Several methods can be used to measure return to capital. The return to capital in financial markets may be used as a proxy for estimating aggregate return to capital. This method would be plausible in countries having well-developed financial markets, however, this is not so in the Indian context. Alternatively, return to capital can be estimated by regressing output on a measure of the capital stock. However, this method would produce biased estimates of the return to capital, since the capital stock is bound to be affected by omitted variables that also affect aggregate output. The method used in this article is quite simple in the sense that it is based on only one assumption and one accounting identity (Chong-En Bai *et al.*, 2006). Consider a decision by a firm at the margin to

purchase a unit of capital for use in production. If it is assumed that the firm takes the output price as given, the nominal return from this transaction is

$$i(t) = \frac{P_Y(t)MPK_j}{P_{K_j}(t)} - \delta_j + \widehat{P_{K_j}}(t) \quad \dots (1)$$

Here  $i$  is the nominal rate of return,  $P_Y$  is the price of the output good,  $P_{K_j}$  is the price of capital of type  $j$ ,  $\delta_j$  is the depreciation rate of type  $j$  capital,  $MPK_j$  is the marginal physical product of type  $j$  capital, and  $\widehat{P_{K_j}}$  is the percentage rate of change of the price of capital of type  $j$ . Two things follow from this equation. First, if asset markets for capital goods are efficient, the return from investing in capital should be the same for every type of capital and for every investor. In practice, however, capital markets may not work

efficiently causing returns to vary for different types of capital. Second, it is the ratio of marginal revenue product of capital to the price of capital which matters for determining the return to capital, and not the marginal physical product of capital. As the marginal product of capital is unobservable, the nominal return to capital can't be estimated directly from the above equation. However, we can infer it from data on capital's share of total output, which we may proxy as 1 minus labor's share, or  $1 - \frac{W(t)L(t)}{P_Y(t)Y(t)}$ , where W is wages and L employment,  $P_Y(t)Y(t)$  is the gross value added (Chong-En Bai *et al.*, 2006). The share of payments to capital is given by

$$\alpha(t) = \sum_j \frac{P_Y(t)(MPK_j)K_j}{P_Y(t)Y(t)}$$

Substituting equation 1 into this accounting identity, we get

$$\alpha(t) = \frac{P_K(t)K(t)[i(t) - \widehat{P}_K + \delta(t)]}{P_Y(t)Y(t)} \quad \dots (2)$$

Here

$$P_K(t)K(t) = \sum_j P_{Kj}(t)K_j(t)$$

denotes the nominal value of the aggregate capital stock,

$$\widehat{P}_K(t) = \sum_j \left\{ \frac{P_{Kj}(t)K_j(t)}{P_K(t)K(t)} \right\} \widehat{P}_{Kj}(t) \quad \dots (3)$$

denotes the average growth rate of the price of capital, and

$$\delta_t = \sum_j \left\{ \frac{P_{Kj}(t)K_j(t)}{P_K(t)K(t)} \right\} \delta_j$$

denotes the average depreciation rate which is the weighted average of depreciation of capital across different industries. The real rate of return to capital  $r(t)$  can then be calculated from equation 4 as

$$r(t) = i(t) - \widehat{P}_{Yt} = \frac{\alpha(t)}{P_K(t)K(t)/P_Y(t)Y(t)} + (\widehat{P}_{Kt}(t) - \widehat{P}_{Yt}) - \delta_t \quad \dots (4)$$

Where,  $\widehat{P}_{Yt}$  is inflation derived from WPI Manufacturing and  $\widehat{P}_{Kj}(t)$  is inflation for different asset classes as reported in Table 21 of RBI monthly bulletin.

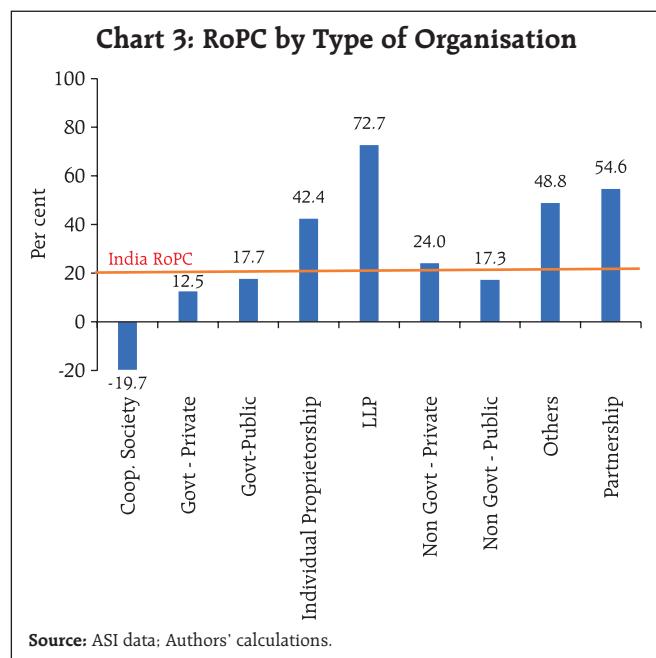
ASI provides the details of capital units by asset types. Different asset types have different useful lives. Following the RBI KLEMS manual, we have assumed 80 years of lifetime for buildings, 20 years for transport equipment, and 25 years for machinery and equipment. For Information and Communication Technology (ICT) assets, the useful life of 5 years has been assumed. Accordingly, using double declining balance rate; depreciation rate of 2.5 per cent, 10 per cent, 8.0 per cent and 40 per cent has been assigned to buildings, transport equipment, machinery and equipment and ICT assets respectively. Zero depreciation for land has been assumed.

## V. Empirical Findings

### a. Type of Organisation

ASI defines an organisation as public limited company where number of shareholders is at least 7 and there is no upper limit for number of shareholders. On the other hand, private limited companies have number of shareholders between 1 and 200. Private firms are not listed on the exchange whereas public firms may or may not be listed on the exchange. It is emphasised that, in this context, public does not mean government firms as is used in common parlance. As opposed to the popular narrative, RoPC of the public manufacturing firms – both Government and non-Government, is nearly equal to 17 per cent (Chart 3)<sup>5</sup>. In fact, the Government (public) firms have slightly higher returns at 17.7 *vis-à-vis* 17.3 per cent of the non-government (public) firms. The existence of large number

<sup>5</sup> The public sector enterprises in the service sector have not performed well (Khanna S. 2015).



of shareholders acts as a check on political interference that would adversely impact the valuation of the company. Management becomes more focused on commercial performance when subject to continuous monitoring by analysts and comparison with peers.

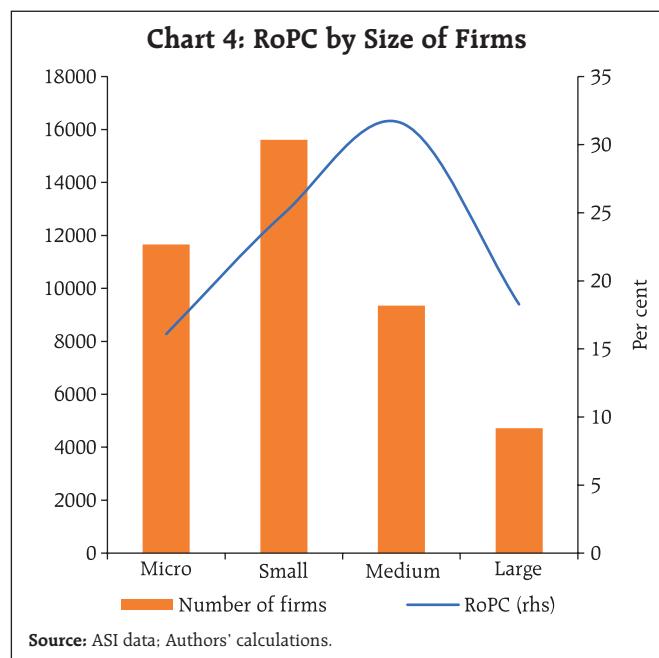
However, the story changes when we compare government (private) with non-government (private) entities. The RoPC of government (private) is 12 per cent whereas it is significantly higher at 24 per cent for the non-government (private) firms. The low return on government (private) is on expected lines since these firms are generally engaged in strategic sectors where profitability is not the primary motive. Also, the government tends to divest the more profitable firms first as they command higher value in the capital markets. Nevertheless, the share of government (private) is very small in manufacturing sector with less than 1 per cent of total value added. Over eighty per cent of value addition takes place in non-government (public) and non-government (private) companies. A noteworthy observation

is the higher RoPC of non-government (private) firms *vis-à-vis* non-government (public) across all firm sizes. Higher returns of unlisted firms *vis-à-vis* listed firms has been corroborated by many studies (Mikkelsen *et al.*, 1997; Rutto, 2013; Kuria, 2014; Pastusiak *et al.*, 2016; Sarkar *et al.*, 1998; Sharma *et al.*, 2019). It is argued that separating management from ownership creates principal-agent problem which leads to agency costs. The agents' decisions may not be geared to maximise the welfare of the Principal. Moreover, listing of firms imposes additional compliance burden, restrains the decision-making and increases tax burden.

Cooperative sector in Indian manufacturing exhibited negative returns to capital due to total emoluments paid to the employees exceeding the GVA in this particular year. The high emoluments in the cooperative sector may not come as a surprise since the orientation of the cooperatives is towards maximising welfare of members and quite often the owners of the cooperative firms work in the same firm (McKillop *et al.*, 2020). Moreover, in the cooperative sector, remuneration is often out of alignment with the performance.

#### b. Variation with Size of the Firm

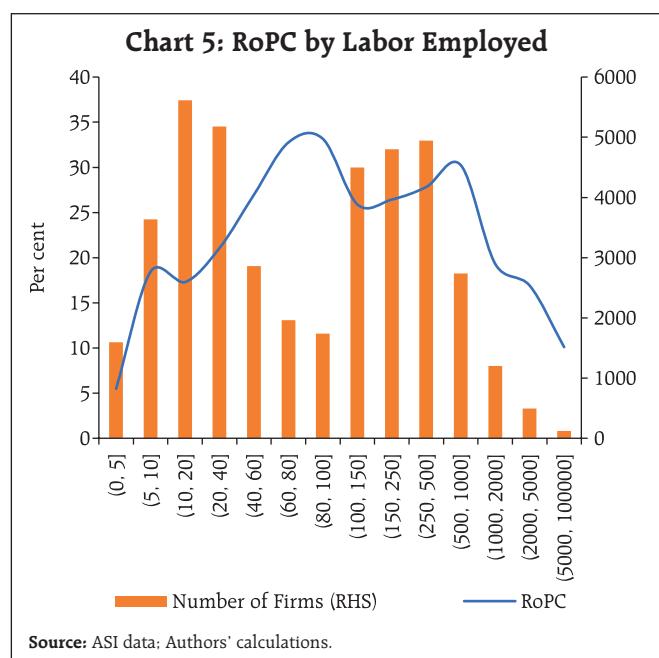
Returns on physical capital yield an inverted U – shaped curve with size of the firm (as defined in the MSME Act 2020) [See Chart 4]. The monotonous increase in returns from micro to small to medium enterprises can be attributed to rising productivity of firms with size and higher economies of scale. However, as the asset size of the firms increases, its ability to raise low-cost capital from formal institutional sources also increases. The easing of financial constraints encourages more investment, which helps bigger firms become more capital intensive, thereby leading to diminishing marginal returns.



Similar results were obtained when number of persons employed was taken as the metric for size (Chart 5).

#### c. Activity-wise RoPC

Manufacture of tobacco products, computer, electronic and optical products, pharmaceuticals,

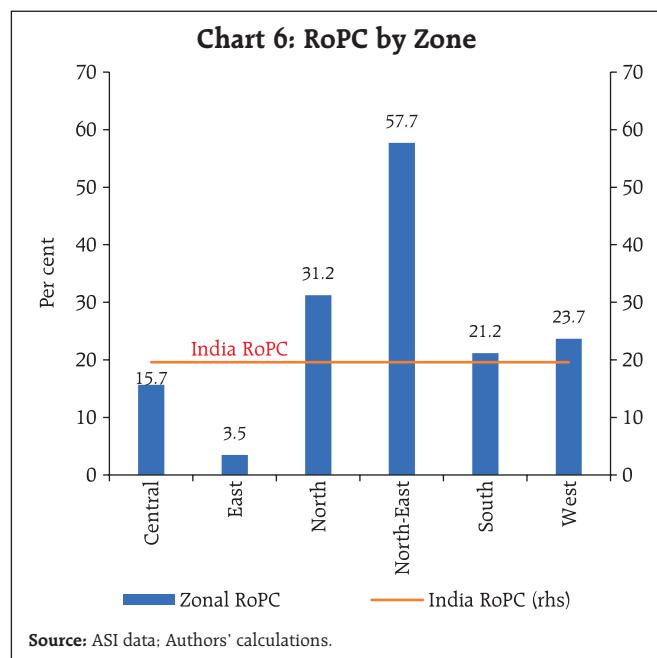


medicinal chemical and botanical products, machinery and equipment (n.e.c.)<sup>6</sup> are among the activities which offer very high returns on physical capital. There are three major groups of basic metals industry, viz., basic iron and steel; basic precious and other non-ferrous metals; and casting of metals. The iron and steel industry, which is also the largest among the three, yielded particularly poor returns as a result of excess global capacity. Bans on iron ore mining and cancellation of coal blocks also adversely affected this industry. Apart from this, India suffered from a unique dichotomy wherein the Indian steel mills are extremely cost effective, but the steel industry is globally uncompetitive (Niti Aayog, 2017). Furthermore, electricity, gas, steam and air conditioning supply, textiles, chemicals and chemical products too yielded below average returns. Activity wise returns are presented in Annex A2.

#### d. Regional Variations

A considerable variance marks the returns across states (Annex A3). Notably, West Bengal, Odisha, Jharkhand, Gujarat, Chhattisgarh, and Andhra Pradesh fare worse than the national average. The north-eastern states outshine the other regions (Chart 6). Most of the value addition in formal manufacturing in these states stems from the pharma sector of Sikkim and coke and refined petroleum products in Assam. The capital investment in Sikkim's pharma sector can be accredited to the North East Industrial Investment Promotion policy, which was started in 2007 under which the industries set up were given a ten-year tax exemption. While this ended in 2017, these companies can still avail similar benefits under various provisions.

<sup>6</sup> Acronym n.e.c. stands for not elsewhere classified.



Intangible capital, *viz.*, R&D stocks, patents, etc., is a much more critical input for value addition than physical capital in pharma industry, therefore, the RoPC tends to be usually high in this sector. In Sikkim, RoPC is further bolstered by the benign policy environment, which offers 100 per cent excise and income tax benefits along with freight subsidies. Additionally, ample availability of land, uninterrupted supply of power, low manufacturing and labour costs provide a conducive environment for the industry<sup>7</sup>. Sikkim is fast emerging as the pharma hub of India rivalling Gujarat, Maharashtra and Himachal Pradesh.

Manufacture of coke and refined petroleum products in Assam exhibited very high RoPC for the period 2017-18 despite being highly

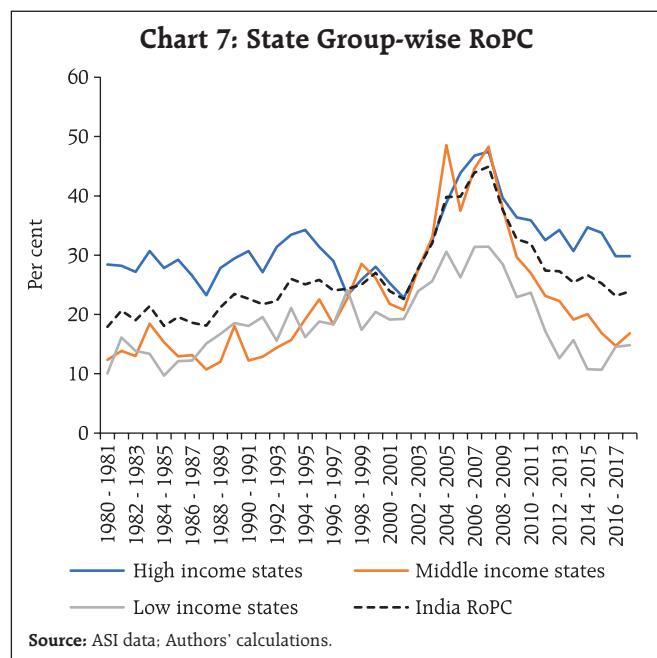
capital-intensive in nature. However, pharma and petroleum products industries, being knowledge and capital intensive, have limited avenues in generating local employment opportunities commensurate to their value addition. Furthermore, a little over 90 per cent of value addition in manufacturing in North-East has taken place only in Sikkim and Assam. Meghalaya comes at a distant third with around 6 per cent contribution in value addition mainly in the manufacturing of other non-metallic mineral products. The contribution of other states in the region is minuscule.

The eastern region of the country has the lowest RoPC due to low returns to investment in base metal industries in Odisha (Annex A4). The state has the highest investment in fixed capital in India and most of the value addition (around 75 per cent) takes place in the basic metals industry.

Another related question is how the return of the industrialised states has fared *vis-à-vis* the poorer states. For this, the major states were divided into three groups *viz.*, high income, middle income and low income based on the initial net value added per capita in registered manufacturing sector (Madhuresh, 2021)<sup>8</sup>. Barring a few isolated instances, the richer states continually maintained higher returns while the poorer states consistently lagged behind especially after 1997-98 (Chart 7).

<sup>7</sup> Sanjib Das (October 16, 2019). Express pharma. *Bolstering Sikkim's growth.*

<sup>8</sup> High income states include Goa, Gujarat, Haryana, Himachal Pradesh, Maharashtra, Karnataka, Uttarakhand and Tamil Nadu. Erstwhile Andhra Pradesh, Chhattisgarh, erstwhile Jammu & Kashmir, Jharkhand, Punjab, and Rajasthan are part of the middle-income group. Assam, Bihar, Madhya Pradesh, Odisha, Uttar Pradesh, Kerala, and West Bengal constitute the low-income group. The group-wise time series of RoPC has been calculated using consolidated ASI data and is not based on the firm level ASI data.

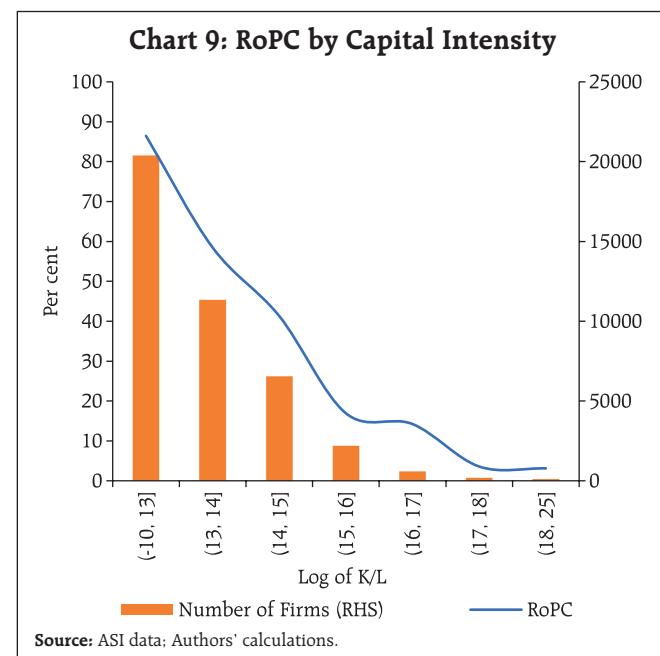
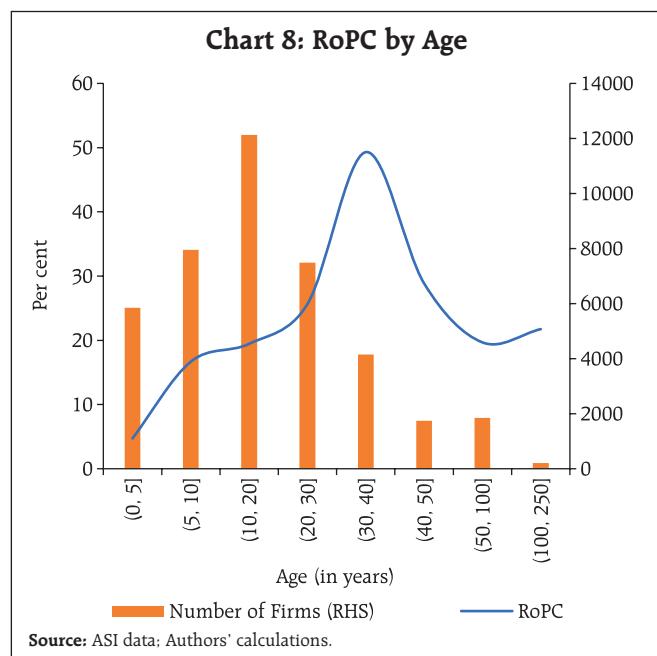


#### e. Variation with Age of Firm

The RoPC of the firms tends to rise as they mature, however, it starts plunging after around 40 years (Chart 8). One strand of literature emphasises the role of selection mechanism. Firms learn about their efficiency as they operate in the industry. The efficient ones grow and survive; the inefficient

decline and exit (Jovanovic, 1982). Therefore, the firms which are older are more likely to be efficient whereas the younger cohorts are a mixed bag of efficient and inefficient entities, thereby bringing the aggregate RoPC down. Another branch in the literature argues about the role of intangible capital, *viz.*, organisational capital and R&D stocks. Firms accumulate organisational capital through a learning process as they age (Atkeson and Kehoe, 2005). The older firms have higher organisational capital and R&D stocks, which the younger firms lack, thus, garnering greater returns compared to their younger counterparts. The older firms are also likely to have more pricing power whereas the younger firms are constrained to operate on low markups for quite some time till they expand their presence in the market. However, these benefits of aging start to diminish after a threshold.

Finally, the relationship of RoPC with capital intensity ( $K/L$ ) has been explored and as expected, diminishing returns to physical capital set in with increasing capital intensity (Chart 9).



## VI. Conclusion

The economic literature is replete with multifarious methodologies of estimating RoPC, the results of which are not strictly comparable to each other. Most of the studies point out that India's RoPC is close to the average return yielded by most emerging economies, which turns out to be significantly higher than the developed/transition economies. In our sample, which uses firm level data, the aggregate RoPC is estimated at 19.5 per cent which seems comparable to the returns observed in other developing countries.

Notwithstanding aggregate returns, a germane issue is the variation of returns based on the attributes of firms. The RoPC for public firms in government and non-government sector is almost same at 17 per cent. However, returns of non-government private firms are significantly higher at 24 per cent as compared with returns of the government (private) firms at 12 per cent. Inverted U-shaped relationship is discernible between firms' size and their returns. The returns of MSMEs increase with size and peak at medium enterprises but decrease for large firms owing to the diminishing marginal returns to capital (larger firms are more capital intensive *vis-à-vis* the MSMEs). Similar, relationship exists when labour employed is used as a yardstick to measure the size of the firms.

It is found that the returns increase with the age of the firm, peaking at 30-40 years age-bracket before tapering off subsequently, indicating that the returns physical capital increase as the firms gain experience, enhance their capacities, gain pricing power and acquire better managerial skills as compared with the younger firms. Looking at the regional disparity in returns, north-eastern region fared much better than other regions. However, most of the value addition has taken place in pharma industry of Sikkim and petroleum products industry of Assam.

A particularly disconcerting trend is the conspicuous under-performance of poor states

*vis-à-vis* the richer states in terms of returns yielded by physical capital. Furthermore, this return differential has persisted over the last four decades. Nonetheless, the growth rate of capital in the poorer states has surpassed the middle-income and rich states in the last decade and these states are becoming increasingly capital intensive (Madhuresh, 2021). However, high growth rate of capital but with low returns somewhat neutralises the welfare gains that should have accrued to these states. The fillip to capital growth may prove to be transitory in the absence of commensurate rise in returns to capital which in turn, can be enhanced by improving public infrastructure such as road connectivity, low-cost uninterrupted power supply, telecom connectivity, law and order, etc.

## References

- Akbas, H., and Karaduman, H. (2012). The effect of firm size on profitability: An empirical investigation on
- Anusha Chari & Jennifer S. Rhee, 2020, 'The Return to Capital in Capital-Scarce Countries', NBER Working Papers 27675, *National Bureau of Economic Research, Inc.*
- Arocena, P., & Oliveros, D. (2012), 'The efficiency of state-owned and privatized firms: Does ownership make a difference?' *International Journal of Production Economics*, 140(1), 457–465. <http://doi.org/10.1016/j.ijpe.2012.06.029>
- Asimakopoulos, I., Samitas, A., and Papadogonas, T. (2009). Firm-specific and Economy Wide Determinants of Firm Profitability: Greek Evidence Using Panel Data. *Managerial Finance*, 35(11), 930-939.
- Atkeson, A., & Kehoe, P. J. (2005), 'Modeling and measuring organization capital', *Journal of Political Economy*, 113(5), 1026–1053. <https://doi.org/10.1086/431289>
- Bai, C.-E., Hsieh, C.-T., & Qian, Y. (2006), 'The return to capital in China' (No. w12755). *National Bureau of Economic Research*. <https://doi.org/10.3386/w12755>

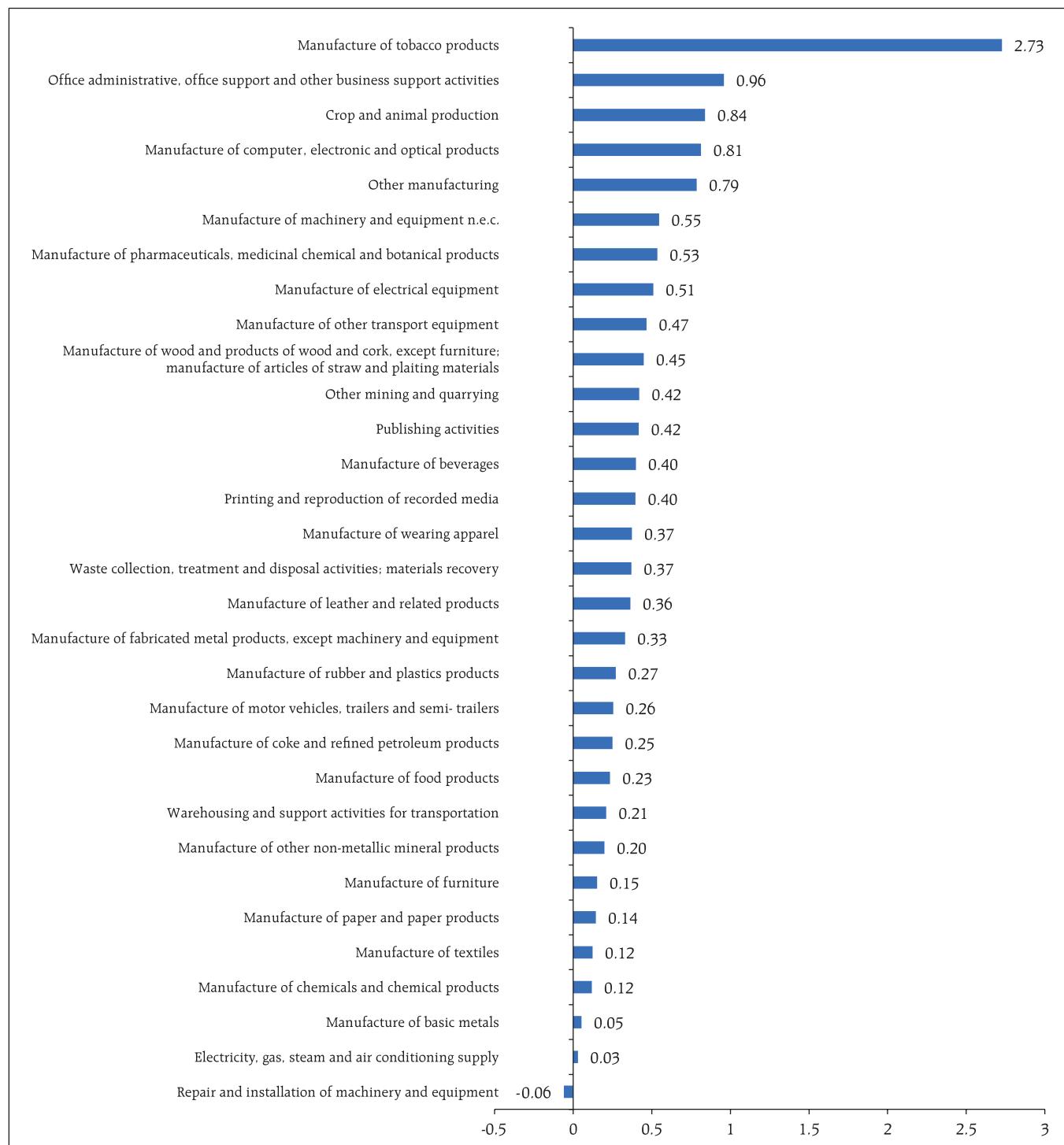
- Banchuenvijit, W. (2012). Determinants of Firm Performance of Vietnam Listed Companies. Academic and Business Research Institute.
- Beck, T., Demirguc-Kunt, A., & Maksimovic, V. (2005). 'Financial and legal constraints to growth: Does firm size matter?' *The Journal of Finance*, 60(1), 137–177.
- Becker-Blease, J., Kaen, F., Etebari, A., and Baumann, H. (2010). Employees, firm size and profitability in U.S. manufacturing industries. *Investment Management and Financial Innovations*, 7(2), 7-23.
- Bigsten, A., Isaksson, A., Soderbom, M., Collier, P., Zeufack, A., Dercon, S., Fafchamps, M., Gunning, J. W., Teal, F., Appleton, S., Gauthier, B., Oduro, A., Oostendorp, R., & Pattillo, C. (2000), 'Rates of return on physical and human capital in Africa's manufacturing sector', *Economic Development and Cultural Change*, 48(4), 801–827.
- Dhavan, R., & Sengupta, S. (2020, October 30), 'A new growth formula for manufacturing in India'. McKinsey. <https://www.mckinsey.com/industries/advanced-electronics/our-insights/a-new-growth-formula-for-manufacturing-in-india#>
- Djankov, S., & Murrell, P. (2002) 'Enterprise restructuring in transition: A quantitative survey', *Journal of Economic Literature*, 40(3), 739–792.
- Doğan, M. (2013). Does Firm Size Affect The Firm Profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, 4(4), 53-59.
- Ehi-Oshio, O., Adeyemi, A., and Enofe, A. (2013). Determinants of Corporate Profitability in Developing Economies. *European Journal of Business and Management*, 5(16), 42-50.
- Frydman, R., Gray, C.W., Hessel, M., Rapaczynski, A., 1999. When does privatization work? The impact of privateownership on corporate performance in transition economies. *Quarterly Journal of Economics* 114, 1153–1191.
- Ghafoorifard, M., Sheykh, B., Shakibaee, M., and Joshaghan, S. (2014). Assessing the Relationship between Firm Size, Age and Financial Performance in Listed Companies on Tehran Stock Exchange. *International Journal of Scientific Management and Development*, 2 (11), 631-635.
- Gupta, N., 2005. Partial privatization and firm performance. *Journal of Finance*, 60, 987–1015.
- Hsieh, C.-T., & Klenow, P. (2014), 'The life cycle of plants in India and Mexico', *The Quarterly Journal of Economics*, 129(3), 1035–1084.
- Idson, T. L., & Oi, W. Y. (1999), 'Workers are more productive in large firms', *American Economic Review*, 89(2), 104–108.
- Ike Mathur, Wanapee Banchuenvijit, The effects of privatization on the performance of newly privatized firms in emerging markets, *Emerging Markets Review*, Volume 8, Issue 2, 2007, Pages 134-146,
- Khanna, Sushil. (2015). The Transformation of India's Public Sector Political Economy of Growth and Change. *Economic and Political Weekly*.
- Kipesha, E. (2013). Impact of Size and Age on Firm Performance: Evidences from Microfinance Institutions in Tanzania. *Research Journal of Finance and Accounting*, 4(5)105-116.
- Lee, J. (2009). Does Size Matter in Firm Performance? Evidence from US Public Firms. *International Journal of the Economics of Business*, 16 (2), 189-203.
- Lingxia Sun, Dong Wook Lee, Dollar-weighted return on aggregate corporate sector: How is it distributed across countries? *Pacific-Basin Finance Journal*, Volume 57, 2019.
- Madhuresh Kumar (2021). Regional Economic Convergence in the Manufacturing Sector: An Empirical Reflection. *RBI working papers*, 02/2021.
- McKillop, D., French, D., Quinn, B., Sobiech, A. L., & Wilson, J. O. S. (2020), 'Cooperative financial

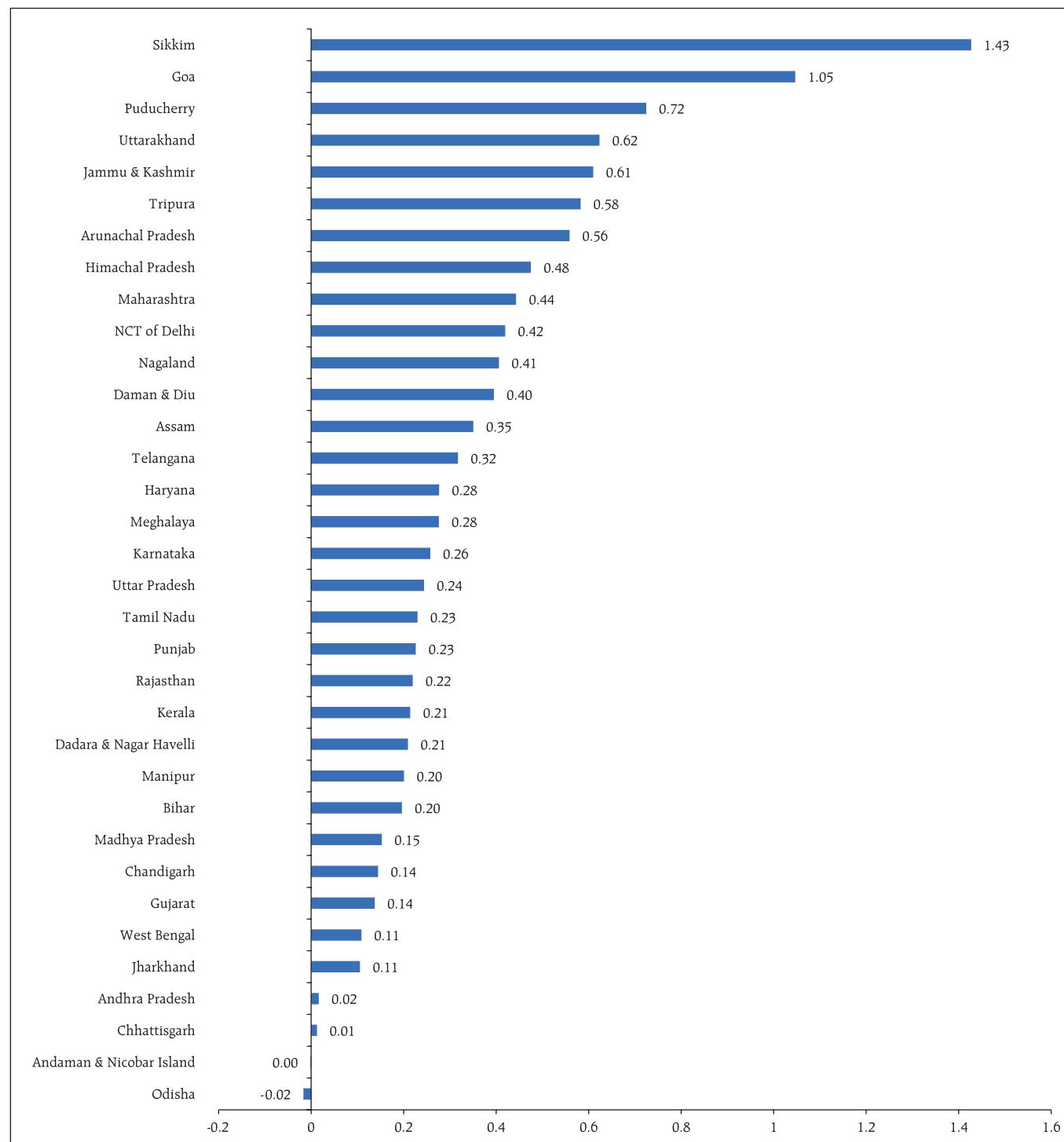
- institutions: A review of the literature', *International Review of Financial Analysis*, 71, 101520. <https://doi.org/10.1016/j.irfa.2020.101520>
- Megginson, W. L., & Netter, J. M. (2001), 'From State to Market: A Survey of Empirical Studies on Privatization', *Journal of Economic Literature*, 39(2), 321–389. <http://doi.org/10.1257/jel.39.2.321>
- Nan-Ting Chou & Alexei Izyumov & John Vahaly, 2016, 'Rates of return on capital across the world: are they converging?', *Cambridge Journal of Economics*, Oxford University Press, vol. 40(4), pages 1149-1166.
- Nishimura, K. G., Nakajima, T., & Kiyota, K. (2005), 'Does the natural selection mechanism still work in severe recessions?: Examination of the Japanese economy in the 1990s', *Journal of Economic Behavior & Organization*, 58(1), 53–78. <https://doi.org/10.1016/j.jebo.2004.03.008>
- OECD. (2003), 'Privatising State-Owned Enterprises. Paris: Organisation for Economic Co-operation and Development' Retrieved from <http://www.oecd-ilibrary.org/content/book/9789264104099-en>
- Pervan, M., & Višić, J. (2012). Influence of firm size on its business success. *Croatian Operational Research Review*, 3(1), 213-223.
- Petrei, A. (1973), 'Rates of Return to Physical Capital in Manufacturing Industries in Argentina', *Oxford Economic Papers*, 25(3), new series, 378-404. Retrieved February 22, 2021, from <http://www.jstor.org/stable/2662320>
- Rao, S. (2015), 'Is the private sector more efficient? A cautionary tale' (Discussion paper 10). Singapore: UNDP Global Centre for Public Service Excellence.
- Salawu, R. O., Asaolu, T. O., & Yinusa, D. O. (2012). Financial policy and corporate performance: an empirical analysis of Nigerian listed companies. *International Journal of Economics and Finance*, 4(4), 175.
- Saraswat V and Bansal R (2017). Need for New Steel Policy. *Niti Ayog*, Working Paper.
- Sarkar, J., Sarkar, S., & Bhaumik, S. K. (1998), 'Does ownership always matter? —Evidence from the Indian banking industry,' *Journal of Comparative Economics*, 26(2), 262–281. <https://doi.org/10.1006/jcec.1998.1516>
- Senchack, A. J., & Lee, W. Y. (1980), 'Comparative dynamics in a life cycle theory of the firm', *Journal of Business Research*, 8(2), 159–185. [https://doi.org/10.1016/0148-2963\(80\)90009-0](https://doi.org/10.1016/0148-2963(80)90009-0)
- Shubita, E., and Alsawalhah, M. (2012). The Relationship between Capital Structure and Profitability. *International Journal of Business and Social Science*, 3(16), 104-112.
- Siba, E. (2015), 'Returns to physical capital in Ethiopia: Comparative analysis of formal and informal firms', *World Development*, 68, 215–229. <https://doi.org/10.1016/j.worlddev.2014.11.016>
- Turkish manufacturing companies. *European Journal of Economics, Finance and Administrative Sciences*, 55, 21-27.
- Tybout, J. R. (2000), 'Manufacturing firms in developing countries: How well do they do, and why?', *Journal of Economic Literature*, 38(1), 11–44.
- Vijayakumar, A., & Tamizhselvan, P. (2010). Corporate size and profitability-an empirical analysis. *Journal for Bloomers of Research*, 3(1), 44-53.

**Annex A1: Broad Structure of ASI Data 2017-18**

<b>Block</b>	<b>Nature of data</b>	<b>Important information</b>	<b>No. of rows</b>
A	Identification parameters of selected unit	Industry code, State, District	66,688
B	Particulars of the factory like name and address of the individual unit, type of organisation, year of initial production, etc.	Type of organisation, Year of initial production	66,688
C	Fixed assets	Land, Building, Plant and machinery, Transport equipment, Computer equipment, Pollution control equipment, Total fixed assets	5,73,160
D	Working capital and loans	Raw Materials & Components, Fuels & Lubricants, Spares, Stores & others, Semi-finished goods, Finished goods, Total inventory	9,50,334
E	Employment and labour cost	Man-days worked, Average number of persons worked, Wages/ salaries	5,06,313
F	Other expenses	Operating expenses, Rent paid for plant & machinery and other fixed assets, Interest paid, Repair and maintenance expenditure of buildings and other fixed assets, Insurance charges, R&D Expenses	55,376
G	Other output or receipts	Receipts from manufacturing and non-manufacturing services, rent received from plant and machinery, land, buildings and other fixed assets	50,173
H	Indigenous input items consumed	Units of consumption of coal, gas, electricity and petroleum	6,12,444
I	Imported input items consumed	Quantity and price of imported items consumed	30,383
J	Products and by-products manufactured by the unit	Quantity manufactured and sold, gross sale value, taxes and subsidies	1,32,238

### Annex A2: RoPC by Sector



**Annex A3: RoPC by State**

#### **Annex A4: Classification of Zones**

<b>Region</b>	<b>States / Union Territories</b>
Central	Madhya Pradesh
Eastern	Bihar, Chhattisgarh, Jharkhand, Odisha, West Bengal
Northern	Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, NCT of Delhi, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand
North-Eastern	Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim, Tripura
Southern	Andaman & Nicobar Island, Andhra Pradesh, Goa, Karnataka, Kerala, Puducherry, Tamil Nadu, Telangana
Western	Dadra & Nagar Haveli, Daman & Diu, Gujarat, Maharashtra

## ***Renewable Energy – The Silent Revolution\****

*Renewable Energy (RE) has played a pivotal role in India's transition to a power surplus country. Empirical evidences suggest that sustained fall in generation costs for RE sources are already exerting downward pressures on electricity tariffs in the spot and wholesale markets. This article examines India's current electricity market structure and identifies several impediments that prevent efficient price discovery and thereby promote resource misallocation. It argues that India's impressive progress on the generation of RE in recent years and the potential promise of RE in contributing to a greener and low-cost economy in the medium-run warrants strategic policy changes, focusing on curbing cross-subsidisation, speedier resolution of stress facing DISCOMs, promotion of decentralised production and distribution and creating an environment for innovations and adoption of green technology.*

### **Introduction**

A silent revolution in India's Renewable Energy (RE) sector has played a pivotal role in India's transition from a power deficit country to a power surplus one in the past few years, exerting significant influence on the dynamics that determine electricity tariffs in the country. According to Ministry of Power, the share of REs in overall installed capacity has more than tripled from 11.8 per cent at end-March 2015 to 37.9 per cent at end-August 2021. The fall in the cost of generation of RE has helped raise its competitive advantage relative to other energy sources.

Even without subsidy, the generation cost of REs has become cheaper than thermal and conventional

sources (NITI AAYOG and RMI, 2020). According to International Renewable Energy Agency (IRENA), RE generation technologies have become the least-cost option for new capacity addition in almost all parts of the world ((IRENA), 2020). In India, the lowest realised auction price for solar has been ₹2.43 per unit and ₹2.44 per unit for wind energy in the last five years. The cost of solar power is expected to fall further and stabilise around ₹1.9 per unit by 2030 (TERI and CPI, 2019). The falling cost of RE and spot price of electricity has posed a viability challenge for long-term price contracts agreed between thermal plants and distribution companies (DISCOMs) under the Power Purchase Agreements (PPAs) scheme. The average electricity price in auctions of renewable energy has been lower than the PPAs of thermal plants by around 30 per cent during 2016-18 (Agarwal, Gulati, & Thangzason, 2019).

There are several affirmative macroeconomic implications of this silent revolution, which include promoting sustainable development by mitigating environmental hazards caused by conventional energy sources, conserving foreign exchange by reducing the amount of imported coal used for generating thermal electricity, reducing electricity tariffs for consumers while improving power availability, and creating space for the fiscal policy through a reduction in subsidies towards LPG and electricity. This article, however, focuses on only one dimension of the revolution, i.e., to examine the impact of renewable energy on energy market dynamics and its potential in increasing power consumption in India.

The article is divided into 7 sections including this introduction. Section 2 presents the structure of the electricity market in India, followed by electricity price dynamics in section 3. Section 4 looks into the impact of renewable energy on electricity prices. Section 5 provides an inter-country comparison of electricity consumption and analyses the potential of renewable energy in increasing electricity

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\* This article is prepared by Avdhesh Kumar Shukla, Dhanya V. Thangzason Sonna and Vineet Kumar Srivastava from the Department of Economic and Policy Research. The views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

consumption in India. Section 6 explores the structural issues in the electricity market, followed by a conclusion in Section 7.

## II. Structure of Electricity Market in India

Electricity, a subject in the concurrent list of the Indian Constitution, is guided by the Electricity Act, 2003. The Act sets out the contours of the electricity market in India. Besides generation, transmission, wheeling and retail sale of electricity, tariff regulations and determination of tariffs are guided by the Electricity Act 2003<sup>1</sup>. The code for tariff determination of the central power sector utilities is framed by the Central Electricity Regulatory Commission (CERC). In states and private utilities, it is the respective State Electricity Regulatory Commissions (SERCs). Accordingly, the Indian electricity market is divided into two broad segments, *i.e.*, wholesale and retail.

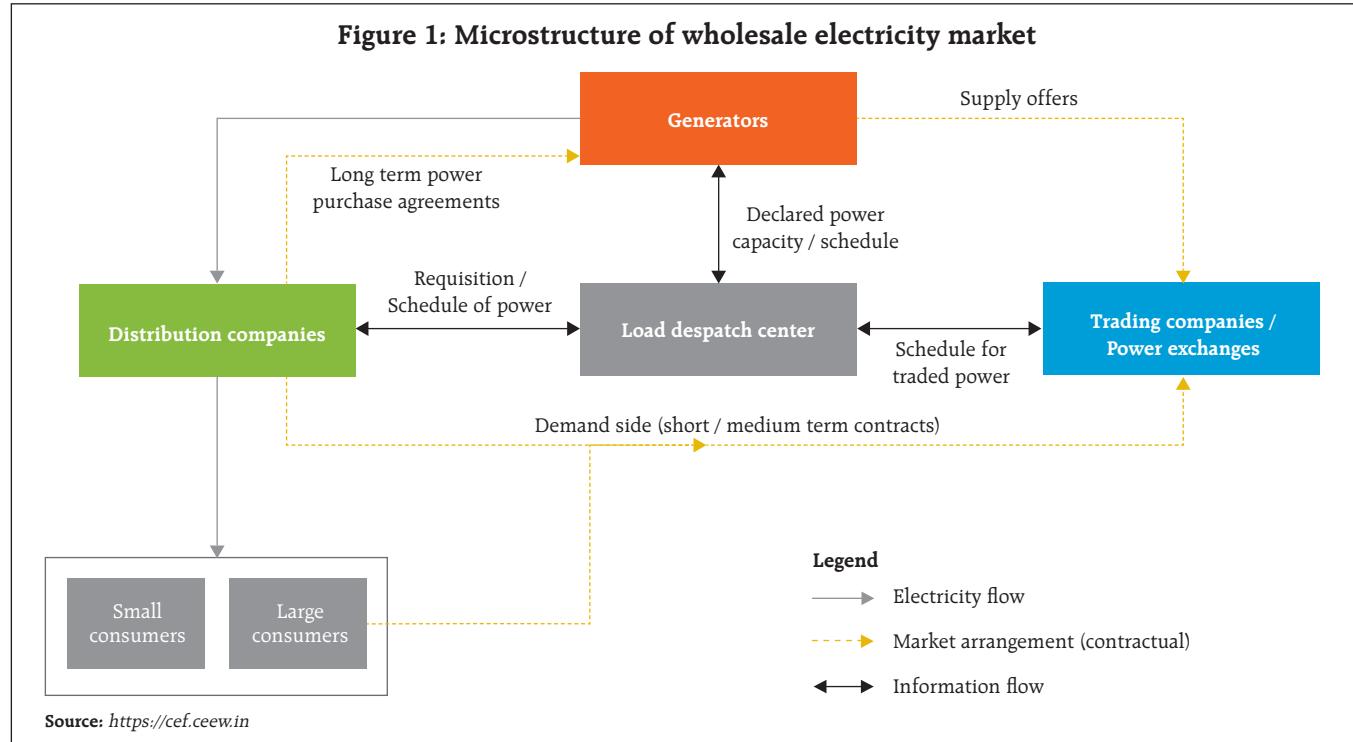
The wholesale market is the primary market where transactions happen between primary power

suppliers, *i.e.*, power generators, distribution companies, load dispatch centres and wholesale electricity traders<sup>2</sup>. A broad microstructure of the wholesale electricity market is provided in Figure 1.

The wholesale market comprises power producers, distribution companies and bulk consumers. It could be further classified in terms of the tenure of contracts (Figure 2). Contracts with a maturity of 7 years and above are considered long-term procurement contracts. Those with the maturity of more than one year but less than seven years are deemed medium-term procurement contracts. On the other hand, contracts with a life span of less than a year are defined as short-term.

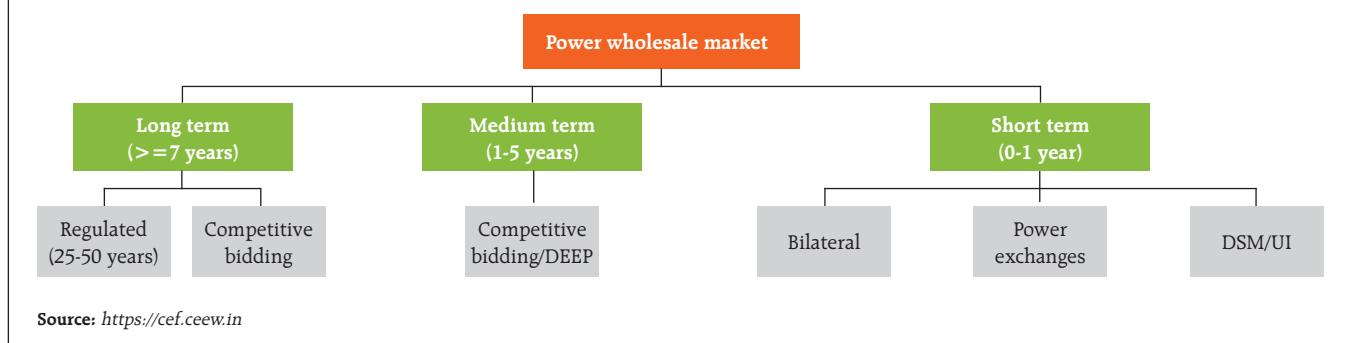
Tariffs for long-term and medium-term contracts are decided by bidding-based power purchase agreements (PPAs). These PPAs are generally signed before the commencement of generation activity. Long-term tariffs don't change on day to day basis.

**Figure 1: Microstructure of wholesale electricity market**



<sup>1</sup> Section 61 & 62 of the Electricity Act, 2003.

<sup>2</sup> <https://cef.ceew.in/masterclass/explains/wholesale-power-market-in-india>

**Figure 2: Type of contracts in the wholesale electricity market**

Contrary to this, the short-term wholesale market operates through power exchanges and bilateral trades. In these markets, price discovery happens on a real-time basis based on prevailing demand-supply conditions. The short-term wholesale market plays a vital role by clearing short-term demand-supply mismatches involving different stakeholders.

The bulk of the wholesale market, around 90 per cent, is long-term in nature. On the other hand, only about 10 per cent of power generation is traded in the short-term market (Table 1). The short-term market

comprises of (a) electricity traded under bilateral transactions through Inter-State Trading Licensees (only inter-state trades), (b) electricity traded directly by the Distribution Licensees (also referred to as Distribution Companies or DISCOMs), (c) electricity traded through Power Exchanges (the Indian Energy Exchange Ltd (IEX) and Power Exchange India Ltd (PXIL)), and (d) electricity transacted through Deviation Settlement Mechanism (DSM).

The retail electricity market comprises power distribution companies and end-user consumers of electricity, other than those who procure power from the open-access market. The retail electricity market structure is akin to a near-monopoly in India as respective regulators determine retail electricity tariffs through tariff orders on a cost-plus basis. Most electricity is purchased under long-term power purchase agreements by distribution companies; therefore, the end-users of electricity are also tied through long-term contracts. DISCOMs who must supply electricity to their consumers mainly rely on supplies through these long-term contracts. As per the national tariff policy 2016, the Regulatory Authorities take the overall cost incurred by DISCOMs, including procuring power through these contracts, into account while finalising tariff orders. Therefore, the tariff structure should be conducive to the overall development and sustainability of the electricity industry. As per policy, tariff decisions

**Table 1: Volume of Short-term Transactions of Electricity concerning Total Electricity Generation, 2009-10 to 2018-19**

Financial year	The volume of Short-term Transactions of Electricity (Billion Unit)	Total Electricity Generation (Billion Unit)	Volume of Short-term Transactions of Electricity as per cent of Total Electricity Generation
2009-10	66	768	9
2010-11	82	811	10
2011-12	95	877	11
2012-13	99	912	11
2013-14	105	967	11
2014-15	99	1049	9
2015-16	115	1108	10
2016-17	119	1158	10
2017-18	128	1203	11
2018-19	145	1245	12
2019-20	137	1391	10

**Note:** 1 unit = 1000 Watts

**Source:** The Central Electricity Regulatory Commission.

should also be conducive to the development of the renewable energy industry. With renewable prices coming down drastically over the past few years, it can bring down retail tariffs in the future.

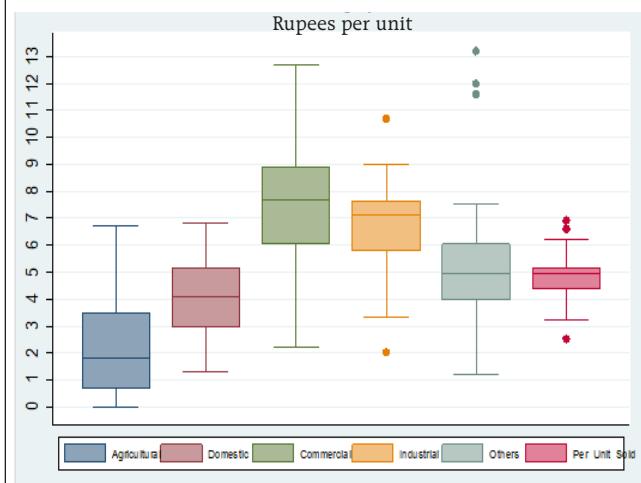
Very few studies, however, have looked at the impact of renewable energy on electricity prices. One primary reason for this can be attributed to the high share of thermal energy in the electricity basket, which accounted for 60.4 per cent of total installed capacity in August 2021. Further, the existence of cross-subsidy in the highly regulated multi-slab electricity market prevents efficient market-based pricing. Nonetheless, since 2008 initiatives are being taken towards market-based price discovery by developing the short-term market. Agarwal, Gulati, & Thangzason (2019) pointed out the positive impact of renewable energy prices in bringing down spot prices significantly downward. International experience also suggests that renewable energy replaces conventional energy and reduces electricity prices in Germany and Denmark (Rintamäki, 2013).

### III: Electricity Price Dynamics and Inflation

Electricity prices in India reflect the impact of cross-subsidisation, because of which agriculture and domestic consumers pay relatively lower prices *vis-à-vis* industries and commercial users (Chart 1). This differential tariff structure is visible across states. In general, industrial and commercial users consume around one-third of total electricity but account for about 55 per cent of the total power bill.

The retail tariff charged to end-users over the recent period is depicted in Chart 2. The average price of electricity per unit sold during the last five years increased by 5.1 per cent, while fees paid by industry and households increased by 7.2 per cent and 6.6 per cent, respectively. On the other hand, tariffs charged for use in agriculture saw a decline of 2.6 per cent during this period (Chart 2). It can be seen that

**Chart 1: Consumer category-wise retail tariff in 2018-19**

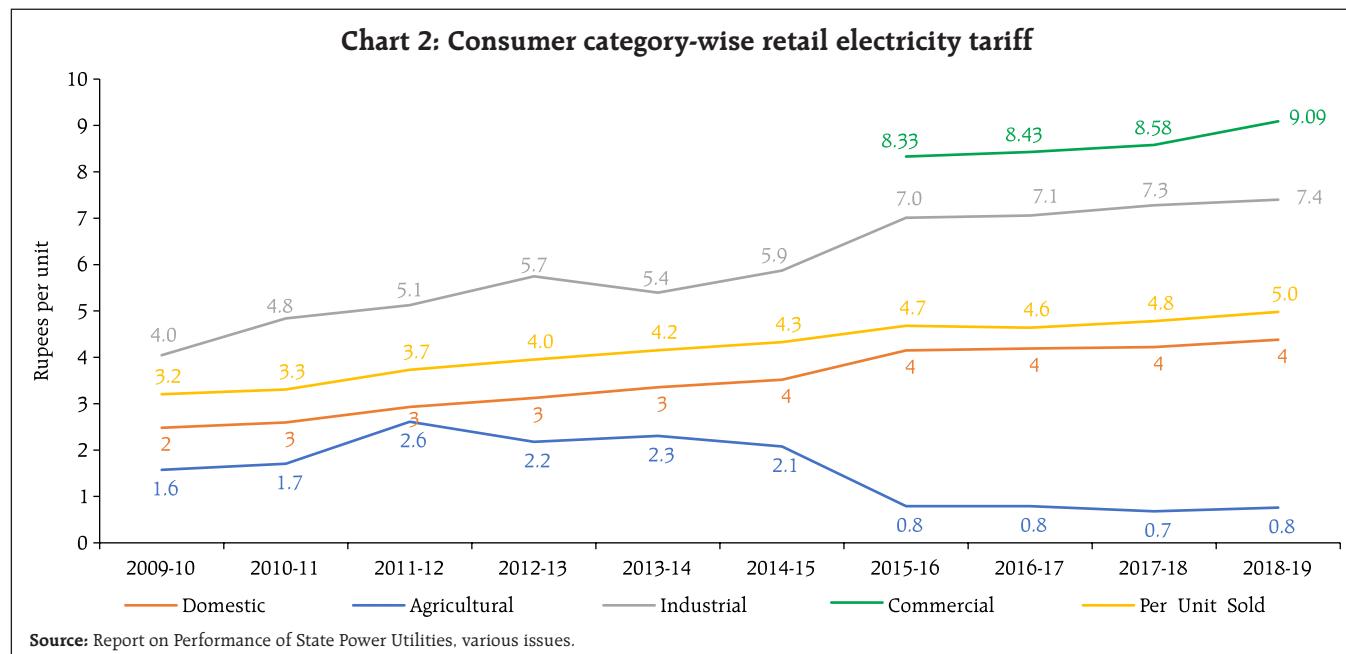


Source: Report on Performance of State Power Utilities 2018-19.

industrial and commercial users pay around double the tariff charged to domestic users.

It may be noted that while determining tariff and the procurement cost of power, the accumulated losses of distribution companies are also considered. Predictably, this has contributed to the gradual and sustained rise in power tariff, which is reflected for all classes of consumers except agriculture (Chart 2).

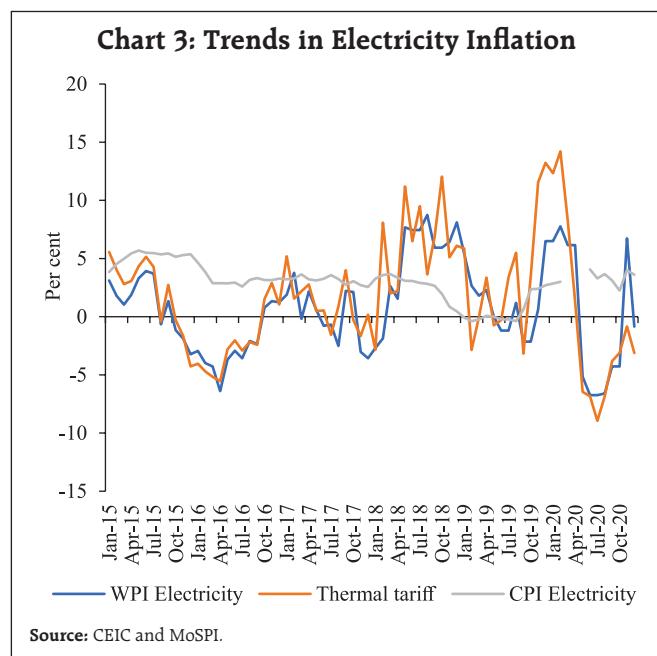
While calculating Wholesale Price Index (WPI) and Consumer Price Index (CPI) for electricity, their underlying nuances are ignored. Both indices differ in terms of the type of prices samples used for estimation. The electricity prices reported in the wholesale price index (WPI) is arrived at by taking the All India Average rate of sale of power based on data collected from various power utilities (central, state, and private sector) by the Central Electricity Authority (CEA). This is different from the earlier practice of treating multiple items based on usage in various sectors such as agriculture, industry, domestic, commercial, and railways. Hence, the WPI electricity inflation moves very closely with average sale prices of power generating stations



which historically includes mostly thermal power (Chart 3). The consumer price index (CPI), on the other hand, considers electricity tariffs paid by individual consumers and hence does not include prices paid by industries and commercial establishments. An assessment of inflation in electricity tariffs measured in terms of CPI shows that it has generally

hovered below the 4 per cent inflation target set for All India CPI while also witnessing a temporary phase of deflation (Chart 3). Even when CPI inflation remains low, electricity inflation faced by industrial and commercial establishments can be high. This can be brought down only if the cost of electricity generation comes down and is passed on to all types of consumers, which requires settling the business right by the power distribution companies.

To empirically estimate the effect of electricity tariff on inflation, in particular, assess the impact of falling RE auction prices on inflation, a variant of the Autoregressive Distributed lag model (Pesaran 1999 and 2001) was employed, dictated by the presence of different orders of integration – I(0) and I(1). It uses monthly WPI and CPI electricity as dependent variables covering 83 months from February 2014 to December 2020. The same set of regressors were regressed with two dependent variables separately; namely, WPI termed Model I to assess the relationship between electricity tariff and producer price and CPI, termed Model II to evaluate the relationship between electricity tariff



and consumer price (Table 3). The regressors were (i) capacity weighted average monthly realised auction price from 72 conventional power plants regulated by Central Electricity Authority (CEA)<sup>3</sup>, (ii) monthly series of realised auction prices of REs – solar, wind and hybrid, covering around 47 plants, interpolated using Catmull-Rom Spline method<sup>4</sup> for those months when auction did not take place, and (iii) monthly clearing spot price of electricity in the most significant power exchange of the country - India Energy Exchange (IEX). Since these auction prices – CEA and REs are the outcomes of bidding processes; generally, the lowest bids at floor/forbearance prices which are derived taking into account cost of generation, tariff, project viability and average purchase costs, among others, price recovery at the auction stage is assumed to be efficient. Together the three regressors captured around 85 per cent of the total electricity supply. Hydel power and nuclear

<sup>3</sup> The 72 power plants are conventional by source, mostly under NTPC and included representative plants under state governments and private sector. The series was shared by CEA on request. As regard RE auction prices, data shared by JMK Research and Analytics were used. Since these two series of data, not available in public domain were shared to the authors on request, the authors owe special thanks to CEA and JMK Research and Analytics for the help. The IEX spot prices are available in public domain.

<sup>4</sup> Catmull-Rom splines are a family of cubic interpolating splines formulated such that the tangent at each point  $p_i$  is calculated using the previous and next point on the spline,  $\tau (p_{i+1} - p_{i-1})$ . The parameter  $\tau$  is known as "tension" and it affects how sharply the curve bends at the (interpolated) control points. It is often set to 1/2 but one can use any reasonable value for this assignment. The geometry matrix is given by:

$$P(s) = [1 \ u \ u^2 \ u^3] \begin{bmatrix} 0 & 1 & 0 & 0 \\ -\tau & 0 & \tau & 0 \\ 2\tau & \tau - 3 & 3 - 2\tau & -\tau \\ -\tau & 2 - \tau & \tau - 2 & \tau \end{bmatrix} \begin{bmatrix} p_{i-2} \\ p_{i-1} \\ p_i \\ p_{i+1} \end{bmatrix}$$

The falling trend in RE prices across world is well documented by various organizations (NITI AAYOG and RMI, 2020; IRENA 2020), also depicted in Chart 8. Similar trend has been depicted by the spliced series of RE auction prices for India. The falling trend in RE auction price can be visualized even with un-spliced series wherein of the 83 months covered for the study there were 27 months when RE auction did not take place with the longest gap between two auctions being 4 months which occurred twice (Chart 4: a-b). This lends credence to reliability of the series for use in the regression.

**Table 2: Correlation Matrix**

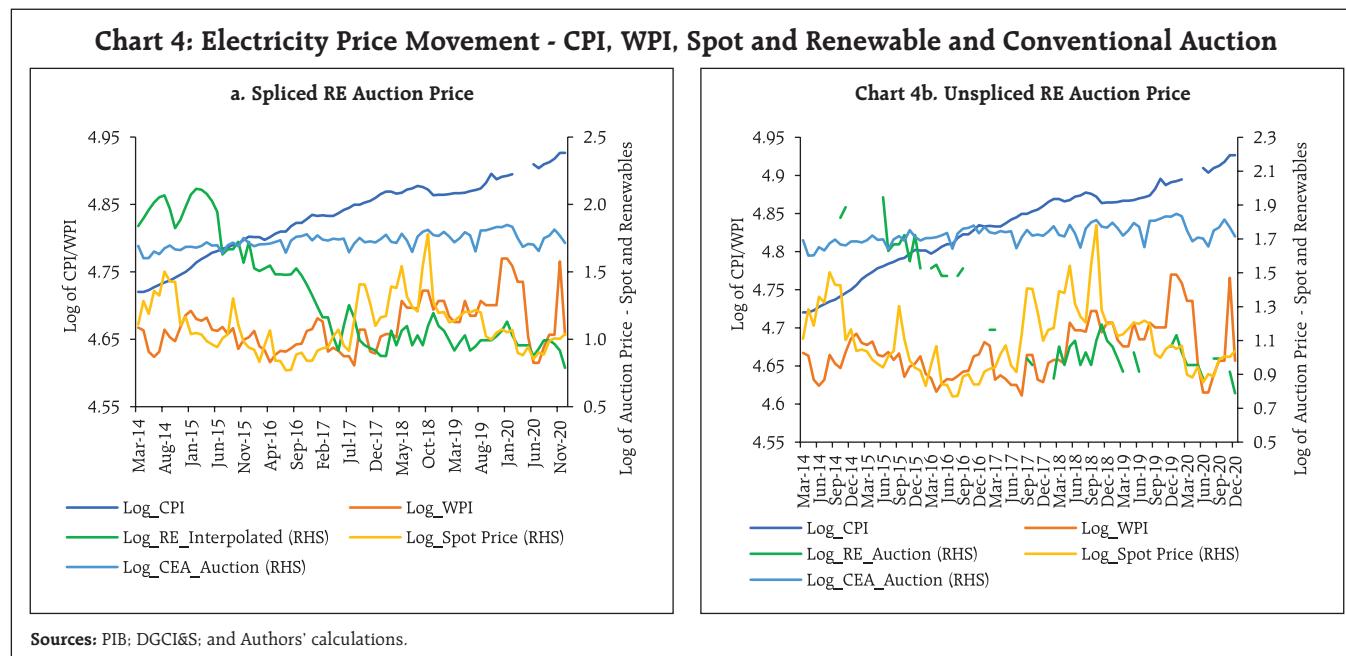
Variables	RE_Auction Price	Electricity CPI	CEA Auction Price	Electricity WPI	Energy Exchange Spot Price
RE_Auction Price	1.00 (0.000)				
Electricity CPI	-0.93 (0.000)	1.00 (0.000)			
CEA_Auction Price	-0.52 (0.000)	0.60 (0.000)	1.00 (0.000)		
Electricity WPI	-0.26 (0.019)	0.38 (0.001)	0.49 (0.000)	1.00 (0.000)	
Energy Exchange Spot Price	-0.03 (0.783)	-0.09 (0.439)	0.06 (0.607)	0.24 (0.027)	1.00 (0.000)

**Note:** Figures in parentheses are p-values

power, which have not been included in the study for non-availability of data, together constituted around 15 per cent of the electricity supply.

Preliminary investigation using correlation analysis suggests that electricity WPI and CPI are negatively correlated with RE auction price. However, there was marked difference in the magnitude of the correlation coefficient, indicating that the rise in CPI electricity during the period was faster than that of electricity WPI while there has been a secular fall in the price of RE auction prices. The correlation coefficient between electricity CPI and RE auction price was -0.93 as against merely -0.26 between electricity WPI and RE auction price. The CEA conventional energy auction price positively correlates with both WPI and CPI electricity (Table 2; Chart 4: a-b).

The results for ARDL regression under Model I suggest that there exists robust statistical evidence of positive relation between producer price of electricity (WPI) and auction prices for conventional power, RE energy and spot price of energy exchange. The WPI electricity inflation has been persistent, as indicated by the significance of own lag up to two months. Among the contemporaneous factors, conventional energy auction price was the most dominant affecting



WPI. The impact of RE auction and spot market prices on WPI have so far been small but with the desired sign indicating that as their share in the energy mix rise, the falling prices in these segments would impart further moderating impact on overall power generation cost (Table 3 and Annex I).

On the contrary, Model II result for CPI did not suggest meaningful relationships with the same set of regressors. None of the regressor - RE auction price, conventional energy auction price and energy exchange spot price, exhibit a statistically significant association with CPI electricity. This observation

**Table 3: Empirical Results – Autoregressive Distributed Lag (ARDL) Framework  
(Period: February 2014 to December 2020)**

Explanatory Variables	Model I: WPI Electricity as Dependent			Model II: CPI Electricity as Dependent		
	Coefficient	t-statistics	p-value	Coefficient	t-statistics	p-value
log.WPI_Electricity(-1)	0.33	2.73	0.00*	-	-	-
log.WPI_Electricity(-2)	0.25	2.06	0.04**	-	-	-
log.CPI_Electricity(-1)	-	-	-	0.56	3.81	0.00*
log.CPI_Electricity(-2)	-	-	-	0.41	2.73	0.00*
log.Convention_Auc_Price	0.19	2.98	0.00*	0.0007	0.36	0.72#
log.Convention_Auc_Price(-1)	0.21	2.93	0.00*	-	-	-
log.Renewable_Auc_Price	0.02	2.31	0.02*	-0.002	-32	0.75#
log.Spot_Price(-1)	0.03	2.34	0.02*	-0.007	1.764	0.21#
Constant	1.19	3.23	0.00*	0.15	0.81	0.42#
<b>Diagnostics</b>				<b>Diagnostics</b>		
$R^2 = 0.65$ ; SEE = 0.02; f-stats = 23.39(p: f-stats=0.00); D-W = 1.90				$R^2 = 0.98$ ; SEE = 0.006; f-stats = 1273.5(p: f-stats=0.00); D-W = 2.03		
*: 1% level of significance; **: 5% level of significance;				*: 1% level of significance; #: Insignificant		

Where,

log.WPI\_Electricity : Adjusted log of monthly WPI Index for electricity

log.CPI\_Electricity : Adjusted log of monthly CPI Index for electricity

log.Convention\_Auc\_Price : Adjusted log of monthly weighted auction price for conventional energy from 75 plants

log.Renewable\_Auc\_Price : Adjusted log of monthly auction price for renewable energy

Spot\_Price : Adjusted log of monthly average spot price of electricity volume cleared in IEX

was on expected line given the stark contrast seen in the preliminary correlation matrix between electricity CPI and WPI vis-à-vis the three regressors. This indicates that the falling price of RE energy and exchange spot price have no moderating impact on the price paid for electricity by household consumers. It is plausible to assume that the myriad of interventions and regulations as regards retail power tariffs over and above the policy of inter-sectoral cross-subsidisation; and the exclusion of all other segments of electricity consumption barring household consumption in CPI electricity may have bearings on this observation (Table 3).

Further exploration into the relationship between the dependent variables and the regressors point to the existence of a long-run co-integrating relation in Model I (WPI). The subsequent error correction model (ECM) suggests that, WPI has been impacted by its lag and auction prices for conventional power, the net impact being 42 per cent of any deviation in WPI from average getting corrected the next month as suggested by (-) 0.42 coefficient for the co-integrating term (Table 4 and Annex I).

**Table 4: Error Correction Model**

Explanatory Variables	Dependent Variable: WPI Electricity		
	Coefficient	t-statistics	p-value
CointEq	-0.42	-6.51	0.00*
D(log.WPI_Electricity(-1))	-0.25	-2.23	0.02*
D(log.Convention_Auc_Price)	0.19	3.32	0.00*
Constant	1.19	6.51	0.00*

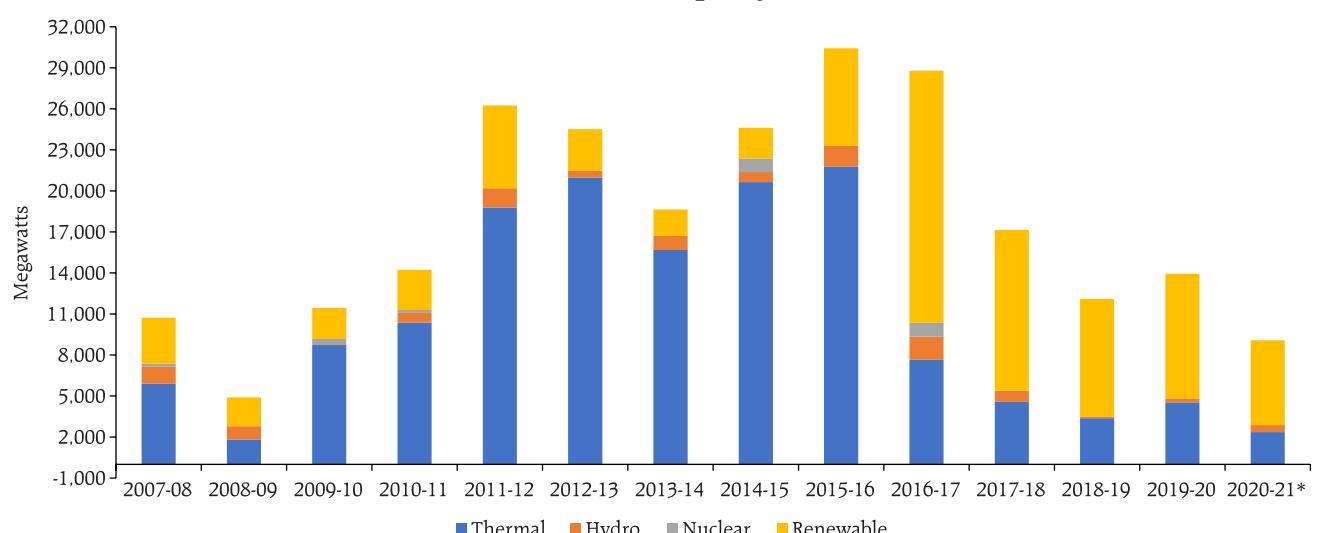
**Diagnostics**

$R^2 = 0.42$ ; SEE = 0.021 f-stats = 19.39(p: f-stats=0.00);

\*: 1% level of significance

**IV. Renewable Energy and Electricity Prices**

The growth of REs in the last five years has been unprecedented and have the potential to bring down electricity prices. As high as 66.6 per cent of the incremental addition to installed capacity in India during the last five years was from RE sources (Chart 5). The installed capacity of RE has doubled over the previous five years, from 38.8 GW in 2015-16 to 86.8 GW in 2019-20. More than 80.0 per cent is solar and wind-based (83 per cent 2019-20). In contrast, the installed capacity of conventional energy, of which thermal has a share of 70 per cent, took eleven years

**Chart 5: Fuel-wise Capacity additions**

\*: Up to February 2021.

Source: CMIE Economic Outlook.

to double from 143.9 GW in 2009-10 to 283.3 GW in 2019-20.

The Government of India (GoI) has set a target of 175 GW installed capacity by 2022 for renewable electricity generation. National Electricity Plan, 2018 estimates the capacity to increase to 275 GW by 2027, leading the renewable share to 44 per cent in installed capacity and 24 per cent in electricity generation. As of December 2020, grid-connected renewable electricity capacity reached 93 GW, with 84 per cent coming from solar and wind power. Around 72 per cent of this capacity has been created by the private sector (Chart 6).

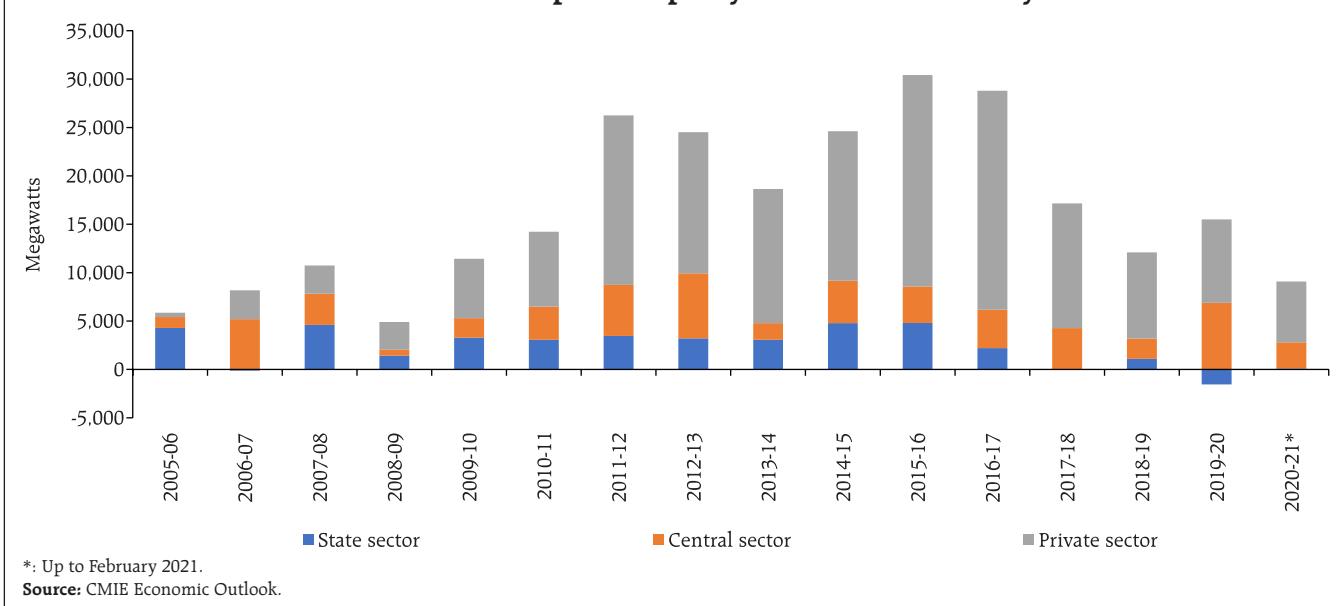
Globally also, the renewable sector has emerged as a significant source of electricity generation supported by cost-reducing technological developments. According to the International Renewable Energy Agency (IRENA), the global weighted-average levelised cost of electricity (LCOE) of utility-scale solar photovoltaics (PV) fell 82 per cent between 2010 and 2019 while that of concentrating solar power (CSP) fell 47 per cent, onshore wind 39 per cent and offshore

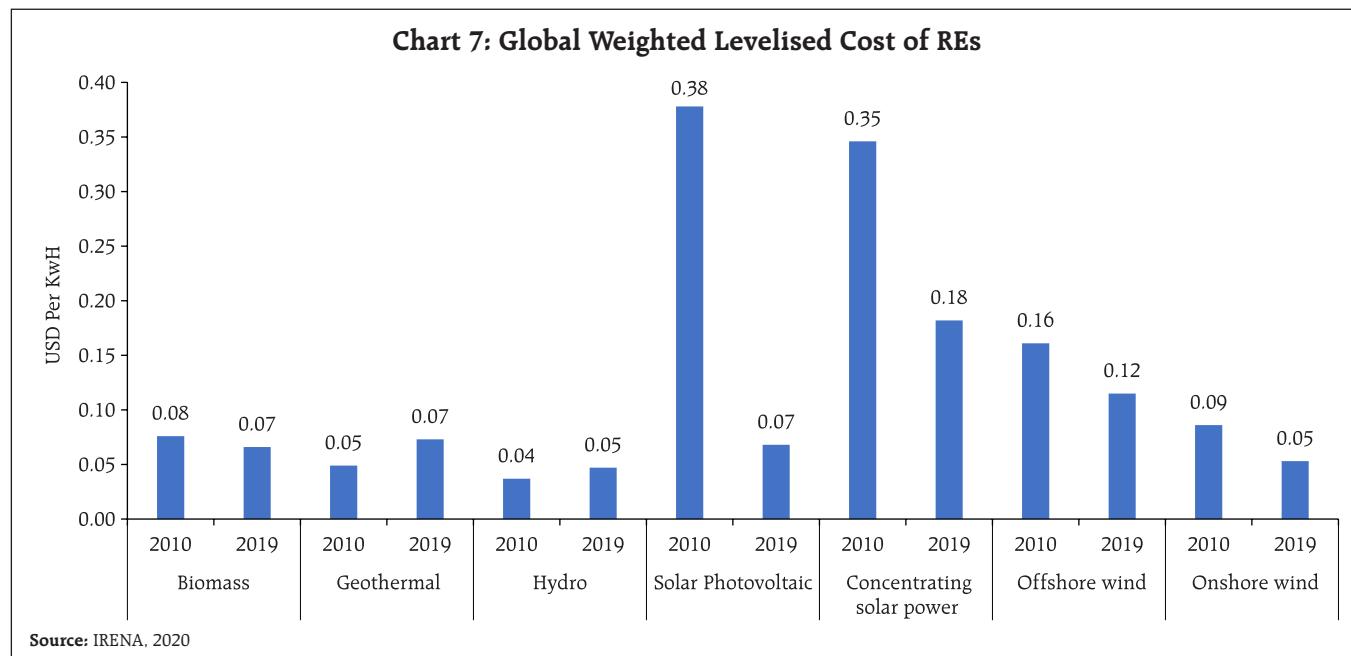
wind 29 per cent (Chart 7). As a result, renewable power generation technologies have become the least-cost option for new capacity in almost all parts of the world (IRENA, 2020).

The global weighted-average total installed cost of projects commissioned in 2019 fell below the USD 1000/kW mark for the first time (Chart 8). India leads the world in having the lowest weighted-average total installed costs of USD 618/kW in 2019.

Along with the significant decline in generation cost, power production is increasingly getting decentralised, especially in the European countries that are at the forefront of adopting renewable energy. For example, more than 1.5 million households in Germany generate electricity, either for self-consumption or to supply to the central grid. More than 180 bioenergy villages have taken responsibility for their own electricity generation in the nation's rural areas. Similarly, in cities, energy and housing associations are installing PV panels on multi-unit buildings, making them self-reliant on electricity.

**Chart 6: Ownership-wise capacity additions of electricity**

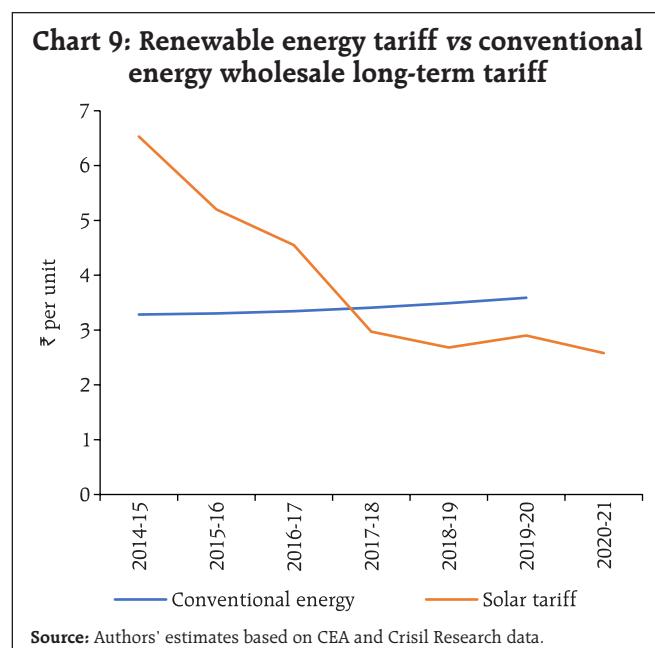




With technological advancements, wind and solar have become the cheapest sources of new electricity in India (Chart 9). By contrast, coal tariffs are projected to increase because of rising transport and capital costs. High storage costs of renewables - a significant deterrent in adopting renewables - are also projected to decline dramatically, which could be transformational for integrating RE into the grid

along with the untapped potential for consumption. By 2030, wind and solar power costs are projected to be between 2.3-2.6 ₹/kWh and 1.9 – 2.3 ₹/kWh, respectively, while the cost of storage is expected to fall by about 70 per cent (TERI, 2020).

Several policy measures have supported the RE sector in India. These include renewable purchase



obligation (RPO) for DISCOMs, Renewable Energy Certificates (REC), accelerated depreciation of renewable energy assets for commercial and industrial users, and the must-run status which exempts it from the merit order principle and mandates the scheduling and dispatch of renewable power (IEA, 2020). The RPOs mandate DISCOMs, Open Access Consumers and Captive Power Producers to obtain 21 per cent of their electricity from renewable sources by 2022 - 10.5 per cent from solar and the rest from non-solar renewable sources. RECs were introduced to help obligated entities to meet their RPO obligations, and trading was allowed in 2011. Further, to attract investment in RE, competitive auctions were started for solar PV in 2010 and wind in 2017 for long term power purchase agreements with a fixed cost.

A major policy initiative that accelerated the use of RE is the introduction of Open Access under the Electricity Act, 2003. Corporate Renewable Power Purchase Agreements allowed corporate buyers to purchase RE from power producers (developers, independent power producer investors) at a pre-agreed price for a pre-agreed period. Indian corporates have been increasingly depending on this route mainly due to lower costs and meeting decarbonisation targets. Waivers on open access charges given by various state Governments like Karnataka, Andhra Pradesh and Telangana during 2017-18 helped increase RE utilisation through open access. From the policy support, India became the second-largest growth market for corporate PPAs after the United States in 2018 and 2019 WBCSD (2019). The recent Green Term Ahead Market (GTAM) initiative is expected to further incentivise the Renewable Energy Market.

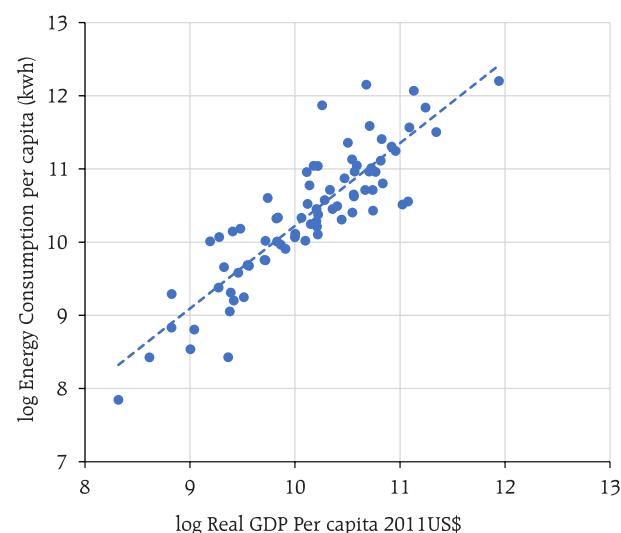
## V. Potential Energy Demand

While renewable energy is increasingly proving as the best alternative to conventional energy sources, its potential to revolutionise the world depends

on the extent of utilisation. According to IEA data, renewables accounted for 13.8 per cent of the world energy supply in 2018, a modest increase from 12.8 per cent in 1990. Their share increased from 18.8 per cent to 23.4 per cent during the same period in electricity generation. Oil and coal continue to be the major players in the energy market. However, the technological changes in recent times have given an edge to electricity over other energy types. These advancements are increasingly providing renewables with a better opportunity for shifting the energy balance towards them. Accordingly, the potential of renewables has to be seen in the larger framework of energy balances, even though its share is modest now. Set against these global trends, we analyse next the overall energy demand scenario for the Indian economy.

The energy demand correlates with economic growth as energy is a significant input in production (Yıldırım, Sukruoglu, & Aslan, 2014). On average, per capita energy consumption was higher for countries having high per capita income (Chart 10). Many studies have shown bi-directional relation between

**Chart 10: GDP Per capita and Energy Consumption**



**Source:** Authors' calculation using World Bank World Development Indicators data

the two variables, while others have pointed towards the causality running from energy to economic growth (Zhang & Xin, 2011; David & Enflob, 2013). Similar results were found in the case of electricity demand and GDP. In the Indian context, bi-directional causality between energy demand and economic growth was significant (Ohlan, 2016).

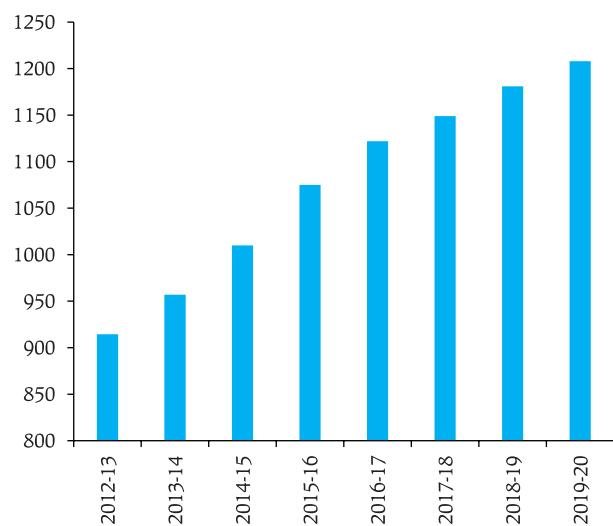
In 2019, India was the third-largest producer and consumer of electricity after China and the USA<sup>5</sup> and recorded a steady rise in per capita electricity consumption on an annual basis (Chart 11). The compound annual growth rate of per capita electricity consumption increased by 4.1 per cent during the 2012-19 period. However, India's per capita electricity consumption at 804.5 kwh in 2014 (1181 kwh in 2018-19 as per the Ministry of Power) is much lower than the world average of 3132.8 kwh<sup>6</sup>. Rising urbanisation and industrialisation are expected to boost electricity demand that needs to be met through sustainable sources. The electricity consumption of India is expected to grow further, and as per the International

Energy Agency, electricity demand in India will almost triple between 2018 and 2040.

The Energy demand during the last decade was met primarily through conventional sources, i.e., fossil fuel. The share of fossil fuel was around 93 per cent in 2010, which declined moderately to 92 per cent in 2018. Renewable energy's share was minuscule in 2018 at 3.4 per cent, despite recording a robust annual growth of 17.3 per cent on a low base of 2010. During this period, energy demand emanated evenly from the transport, industry, and buildings sector. According to British Petroleum (BP), the energy demand of the Indian economy in the near to medium term will rise at a higher pace *vis-à-vis* the global economy and comparable peer economies. BP has made its predictions under two scenarios, i.e., a rapid rise in renewable energy capacity and business as usual. Under the rapid increase scenario, the share of renewables is expected to rise rapidly from less than four per cent in 2018 to around 10 per cent in 2025 and further to 40 per cent in 2040. Compared to this, in the business as usual scenario, the share of renewables is projected to be around 5.5 per cent in 2025 and 15.5 per cent in 2040. In the business as usual scenario, the reliance of the Indian economy will continue to be high on fossil fuel and imported fuel, entailing higher energy risk for the Indian economy (Table 5).

India's potential in harnessing renewable energy is immense (Table 6). Based on the availability of land and solar radiation assessment, the potential solar power in the country has been estimated to be around 750 GW. Further, there is significant potential from decentralised distributed applications to meet the hot water requirement for residential, commercial, and industrial sectors through solar energy and meet cooking energy needs in rural areas through biogas. Renewable energy also has the potential to usher in universal access to power. The wind is an intermittent and site-specific source of energy, and therefore, an

**Chart 11: Annual Per Capita Consumption of Electricity (KWh)**



Source: Central Electricity Authority.

<sup>5</sup> [https://www.business-standard.com/article/economy-policy/now-india-is-the-third-largest-electricity-producer-ahead-of-russia-japan-118032600086\\_1.html](https://www.business-standard.com/article/economy-policy/now-india-is-the-third-largest-electricity-producer-ahead-of-russia-japan-118032600086_1.html)

<sup>6</sup> As per World Bank World Development Indicators Database, 2020

**Table 5: Energy Consumption Scenario for India  
(energy in exajoules)**

	Growth			Rapid scenario			Business-as-usual scenario		
	2010	2018	2010-2018 CAGR (%)	2025	2040	2018-2040 CAGR (%)	2025	2040	2018-2040 CAGR (%)
<b>Consumption</b>									
Total	23	34	5.2	44	65	3.1	44	71	3.4
Fuels									
Oil	7	10	5.0	11	12	0.8	11	16	2.3
Natural gas <sup>+</sup>	2	2	-0.2	4	11	7.7	3	6	5.3
Coal	12	19	5.7	22	12	-2.2	25	33	2.6
Nuclear	0	0	6.0	1	3	9.9	1	2	8.1
Hydro	1	1	2.6	2	2	3.0	2	2	2.5
Renewables*	0	1	17.3	4	26	15.3	2	11	10.7
<b>Sectors ^</b>									
Transport	3	5	5.5	6	10	3.6	6	10	3.6
Industry	12	17	4.7	22	34	3.2	22	36	3.4
Non-combusted	1	2	5.6	3	4	2.4	3	4	3.0
Buildings	6	10	5.7	13	18	2.7	14	21	3.4

<sup>^</sup>: Includes electricity and hydrogen; and their associated conversion losses.

\*: Renewables include wind, solar, geothermal, biomass, biomethane and biofuels.

<sup>+</sup>: Natural gas does not include biomethane.

**Source:** Energy Outlook 2020, British Petroleum.

extensive Wind Resource Assessment is essential for selecting potential sites. Through the National Institute of Wind Energy (NIWE), the Government has installed over 800 wind-monitoring stations all over the country and issued possible wind maps at 50 meters, 80 meters, 100 meters and 120 meters above the ground level. The latest assessment indicates a gross wind power potential of 302.25 GW and 695.50 GW in the country at 100 meters and 120 meters above ground level. Most of this potential exists in seven windy states.

**Table 6: Estimates of Potential of Renewable Energy in India**

Source	Potential in GW
Solar	750.0
Wind	695.5@
Bio-energy	25.0
Small Hydro Potential\$	20.0
Total	1490.5

@: Wind Power Potential at 120 mtr agl (GW). Wind Power Potential at 100 mtr agl is around 302.25 GW.

\$: < projects less than 25 MW capacity.

**Source:** Annual Report 2019-20, MNRE.

A peculiarity of renewable sources of energy is their dependence on location and geographical suitability. Due to this, the assessed renewable energy sources are concentrated in a few states with adequate sun-light, waste and fallow land and windy areas (Table 7). Around 81 per cent of potential renewable energy capacity is located in these states.

**Table 7: State-wise Estimates of Potential for Solar and Wind Energy**

States	Solar	Wind (Wind Power Potential at 120 mtr agl (GW))
Andhra Pradesh	38.44	74.90
Gujarat	35.77	142.56
Karnataka		124.15
Madhya Pradesh	61.66	15.40
Maharashtra	64.32	98.21
Rajasthan	142.31	127.75
Tamil Nadu	17.67	68.75
Jammu and Kashmir	111.05	
Uttar Pradesh	22.83	
Himachal Pradesh	33.84	
Odisha	25.78	
<b>Sub-total</b>	<b>553.67</b>	<b>651.72</b>
<b>Total</b>	<b>748.98</b>	<b>695.50</b>

**Source:** Annual Report 2019-20, MNRE.

With rising electricity demand, the cost of power becomes paramount for long-term sustainability. It may be noted that electricity expense is a critical component of any firm's total expenditure. Higher electricity cost adds to the overall sale price of goods and services produced in an economy, affecting price competitiveness. Comparing electricity prices for businesses across select major economies reveals that electricity prices in India are significantly higher than those in peer economies. It is even more evident when comparing with our key export competitors, viz., Bangladesh, ASEAN economies and China (Table 8). In this context, renewable energy could play an essential role by providing electricity at a lower price.

**Table 8: Price of electricity for businesses<sup>7</sup> (US cents per kWh)**

Economy	2015	2016	2017	2018	2019	2020
Bangladesh	9	9	9	9	9	10
Indonesia	14	14	11	11	11	11
Taiwan, China	14	14	12	11	12	12
Malaysia	17	15	14	13	12	12
New Zealand	14	14	13	12	12	12
Canada	13	13	16	14	13	12
France	14	14	15	14	13	14
China	14	15	14	15	16	15
Hong Kong, China	15	16	15	15	15	16
South Africa	10	9	15	15	15	16
Mexico	17	14	7	7	12	17
Brazil	12	16	18	15	16	18
United Kingdom	15	16	16	16	17	18
United States	15	15	16	17	17	18
India	23	22	21	18	17	18
Australia	22	21	19	17	23	20
Japan	29	26	23	22	19	21
Pakistan	21	19	19	19	19	22
Germany	29	29	27	34	32	26
Spain	23	25	16	19	25	26

**Source:** Doing Business Report, World Bank.

<sup>7</sup> The price of electricity is measured in U.S. cents per kWh. A monthly electricity consumption is assumed, for which a bill is then computed for a warehouse based in the largest business city of the economy for the month of March. The bill is then expressed back as a unit of kWh. The index is computed based on the methodology in the DB16-20 studies.

## VI. Challenges and Structural Issues

As the role of RE sources is expected to increase progressively, DISCOMs signing new PPAs will need to recognise the scope for more significant disruptions ahead<sup>8</sup>. A related challenge would be managing variability or uncertainty of RE. Unlike fossil fuel-based electricity that can be generated steadily, renewable sources like wind and solar cannot be generated on demand. According to the NITI AAYOG Expert Group, meeting the installed capacity of RE would not be as much a financial challenge as a technical one. In this regard, the success of the ongoing project on nationwide Grid integration has become a *sine qua non* to managing the transition non-disruptively. A related issue has been the rising demand for solar modules, mostly met through imports. Therefore, enhancing the domestic manufacturing capacity of solar panels in line with the AATMANIRBHAR BHARAT Scheme is paramount.

In RE, financing costs account for the most significant component – between 50 and 65 per cent – of the prevailing RE tariffs in India, which is even higher in other developing countries where the risk premium is higher. While policy interventions in the form of renewable purchase obligations (RPO) for DISCOMs, accelerated depreciation benefits (ADB), and must-run status (MRS) have served the sector well, judicious implementation of additional incentives such as viability gap funding and interest rate subvention, generation-based incentive, longer tenure debt, back-load RE tariff, can provide further impetus to RE development.

The implementation of these intervention policies, however, have been not without problems.

<sup>8</sup> A glimpse of this potential disruption was visible during the lockdown. According to NITI Aayog, during the nationwide lockdown DISCOMs experienced demand reductions of almost 25 per cent over the previous year for which they are facing potential revenue losses of 8–10 per cent. On the other hand, the generation of RE was intact resulting in increased share of RE in total generation from 9.0 per cent at end-March 2020 to 13.0 per cent during April-May 2020.

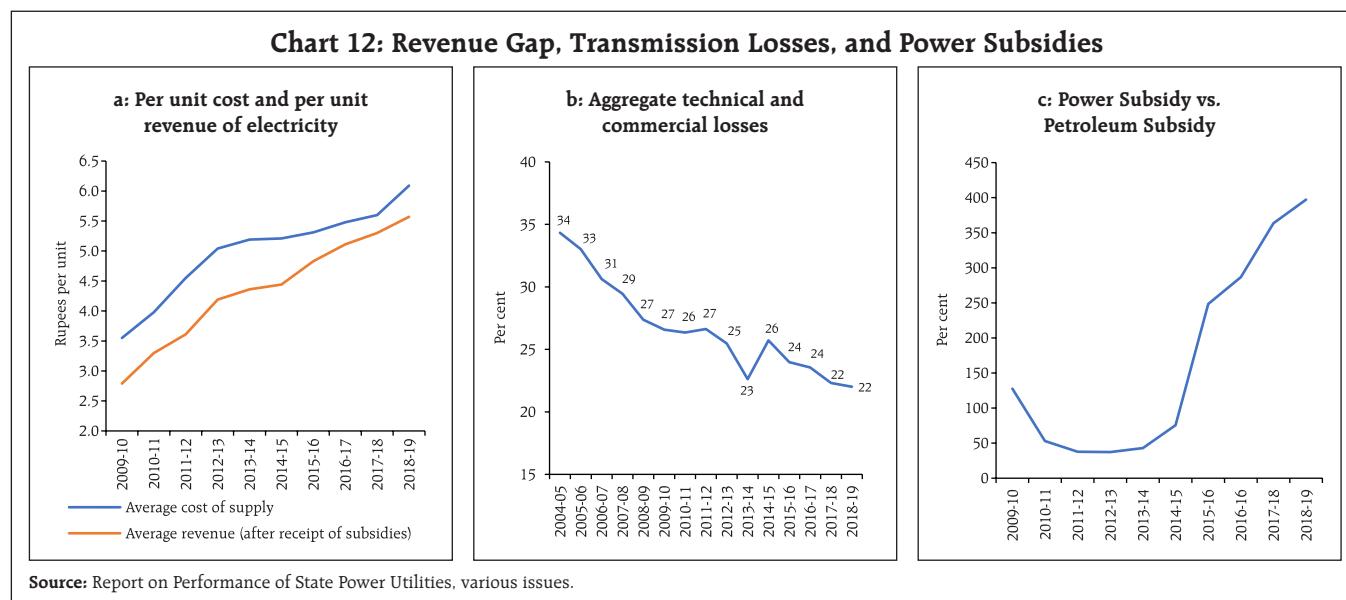
As per the Indian Electricity Act, 2003, RPO mandates that all electricity distribution licensees purchase or produce a minimum specified quantity of their requirements from RE sources or renewable energy certificates (RECs) from the National Load Dispatch Centre. However, enforcing RPO targets has remained a challenge, with most states and UTs achieving more diminutive than their respective RPOs. As regards the ADB scheme, there exists scope for improvement by linking disbursals of benefits with the performance of projects over a longer timeframe, i.e., bank guarantees in place of availing AD, which can be released year on year subject to minimum account or outright change to Production Tax Credits (in Rs./kWh) which may or may not be transferable. Likewise, under the MRS, RE plants cannot be subjected to curtailment on merit order despatch or any other commercial consideration, i.e., RE plant has to supply electricity to the grid under all conditions. This status was accorded to the RE sector in 2010. There have been instances of DISCOMs delaying payments and unplugging generating capacity from the grid called backing-down due to poor financial status to even going back on their PPA commitments with solar and wind power producers. These issues will have to be addressed and resolved for RE sources to expand and scale up. Solar power has achieved grid parity in recent auctions. Among other benefits, this was because the land was made available from the state governments, and the bids were based on long-term power purchase agreements backed by state government guarantees.

Reforming the retail distribution of electricity holds the key to the country's long-term energy security and sustainability. While reducing commercial, technical and transmission losses remains a continuing challenge, to date, the market

pricing of tariffs has been the biggest challenge to the power sector. Cross subsidy from industry to other sources of demand and direct subsidies to specific segments have been widely deployed. The result has been the poor performance of the overall electricity sector. The future health of the power sector hinges on closing the gap between the average cost of supply (ACS) and average revenue realised (ARR).

As late as 2018-19, the annual ARR was as low as ₹5.6 per unit against ₹6.1 per unit incurred on ACS annually, still a deficit of 8.2 per cent compared with the deficit of 16.0 per cent when the gap peaked in 2012-13. The aggregate technical and commercial (AT&C) loss or the deadweight loss - the percentage of power procured by the distribution company for which it did not receive any payment was as high as 22 per cent in 2018-19. This contrasts with the experience of advanced economies viz., UK and US, where AT&C losses are about 6-7 per cent. Higher losses keep the entire energy sector under duress.

The electricity sector has a complex cross-subsidisation scheme under which high energy-consuming customers from industry and commercial sectors subsidise consumption by smaller consumers in agriculture and domestic sectors. However, cross-subsidisation alone would not be sufficient to meet all financial needs of the distribution sector. State governments provide direct subsidies to agriculture and domestic consumers in the form of lower tariffs. Over the years, support for the electricity sector has increased very rapidly. Power subsidies were four times higher than petroleum subsidies in 2018-19 compared to less than half in 2013-14. The sharp rise in subsidy is keeping the whole distribution system inefficient (Chart 12: a, b and c and Table 9).



**Table 9: Power subsidy and petroleum products subsidies**

Financial year	Subsidy (₹ crore)		Ratio with GDP (%)	
	Power	Petroleum	Power	Petroleum
2009-10	19,074	14,951	0.30	0.23
2010-11	20,334	38,371	0.27	0.50
2011-12	25,771	68,484	0.29	0.78
2012-13	36,089	96,880	0.36	0.97
2013-14	36,758	85,378	0.33	0.76
2014-15	45,584	60,269	0.37	0.48
2015-16	74,515	29,999	0.54	0.22
2016-17	78,938	27,539	0.51	0.18
2017-18	88,919	24,460	0.52	0.14
2018-19	98,653	24,837	0.52	0.13

Source: PFC and Union Budget.

## VII. Conclusion and Way Forward

India's commitment to the International Solar Alliance and the re-entry of the USA to Paris Accord have given a renewed vigour to the adoption of REs in the country's strategic plans for the energy sector in the medium-term. The changing electricity price

dynamics under the marginal but rising influence of REs can contribute to a greener and low-cost economy going ahead.

Estimates suggest that even without the policy support that the sector enjoys, it can be commercially viable. There are evidences that the lower generation cost of RE sources are exerting downward pressure in the spot and wholesale markets for electricity though the same is yet to be witnessed in the retail market for electricity. Competitive tariff structure and targeted steps to minimise transmission and distribution losses and also limiting cross-subsidisation could promote efficient price discovery and attract higher RE investment.

A clean, affordable and sustainable energy supply should drive future growth. Besides environmental benefits, countries that manage to transition effectively to RE sources will be home to competitive energy solutions and making firms more resilient to energy shocks and weather disruptions.

## References

- WBCSD (2019). *PPAs in India: Market & Policy Update*. World Business Council for Sustainable Development.
- Agarwal, R., Gulati, S., & Thangzason, S. (2019). Renewable Energy and Electricity Price Dynamics in India. *Reserve Bank of India, Monthly Bulletin*, 25-34.
- David, I., & Enflo, K. (2013). Causality between energy and output in the long-run. *Energy Economics*, 135-146.
- IEA. (2020). *India 2020: Energy Policy Review*. International Energy Agency.
- IRENA. (2020). *Renewable Power Generation Costs in 2019*. Abu Dhabi: International Renewable Energy Agency.
- IRENA. (2019). *Renewable Power Generation Costs in 2019*. Abu Dhabi: International Renewable Energy Agency.
- NITI AAYOG and RMI (2020): *Towards a Clean Energy Economy - Post COVID-19 Opportunities for India's Energy and Mobility Sectors*, NITI AAYOG and Rocky Mountain Institute Report.
- Ohlan, R. (2016). Renewable and nonrenewable energy consumption and economic growth in India. *Energy Sources, Part B: Economics, Planning, and Policy*, 1050-1054.
- Pesaran, M. and Shin, Y. (1999), An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis, in S. Strom, (Ed.) *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch centennial Symposium*, Cambridge University Press, Cambridge.
- Pesaran, M.H., Shin, Y. and Smith, R.J. (2001), Bounds testing approaches to the analysis of level relationship, *Journal of Applied Economics*, 16, 289-326.
- Rintamäki, T. (2013, February). Impact of renewable energy on electricity prices -comparative analysis of Denmark and Germany. Finland: Aalto University, School of Science.
- TERI and CPI (2019), *Accelerating India's Transition to Renewables: Results from the ETC India Project*, The Energy and Resources Institute and Climate Policy Initiative Report.
- Yıldırım, E., Sukruoglu, D., & Aslan, A. (2014). Energy consumption and economic growth in the next 11 countries: The bootstrapped autoregressive metric causality approach. *Energy Economics*, 14-21.
- Zhang, Z., & Xin, R. (2011). Causal Relationships between Energy Consumption and Economic Growth. *Energy Procedia*, 2065-2071.

### Annex: Renewable Energy: The Silent Revolution - ARDL and ECM

The unit root test for seasonally adjusted naturalised log of the variables using Augmented Dickey Fuller (ADF) suggest the presence of unit root in three of the series i.e., I(1), namely, CPI, RE auction price and spot price while WPI and conventional energy auction price did not have unit root at levels i.e., I(0) – thus the choice for Autoregressive Distributed Lag (ARDL) framework. At first difference with two period lag, none of the series has unit root. Appropriate lag length of 1(one) was chosen based on Akaike Information Criteria (AIC) (Annex Table 1). The period of the study being from February 2014 to December 2020.

The same regression was run twice – one with WPI and the other with CPI as the dependent variable, with the same set of regressors, namely, conventional energy auction price, RE auction price and spot price, termed as Model I and Model II. As already discussed, this was done with the purpose to separately analyse the impact of RE auction price on producer price and consumer price. The moderating impact, statistically significant, of RE auction price on WPI was along expected line. CPI electricity has no statistically meaningful relation with the regressors indicative of price distortions at retail level.

**Annex Table 1: ADF Test of Unit Root – Monthly Data Akaike Information Criteria**

Variables	t-statistics without Trend (Level, lag=1)	t-statistics without Trend (First Difference, lag=1)
log.WPI_Electricity	-3.24*	-10.56*
log.CPI_Electricity	-1.19#	-2.008*
log.Convention_Auc_Price	-3.24*	-10.52*
log.Renewable_Auc_Price	-0.77#	-7.23*
log.Spot_Price	-2.14#	-12.43*

\*: 1% level of significance; #: Insignificant

The long-run Bound Tests pointed to the presence of long-run cointegration relation in Model I and none in Model II. The F-statistics and absolute value of t-statistics for Model I were higher than the respective I(1) bound values at all levels of significance for Model I confirming long-run cointegration relation among the variables (Annex Table 2).

Having established the presence of short-run relationship between WPI with its own lag and conventional energy auction price with an adjustment speed of 0.42 using error correction model (ECM), the robustness of the Models was assessed. CUSUM test for both the models suggest that the coefficients were stable within 5 per cent confidence band. Q-statistics

**Annex Table 2: F and T-Bounds Test Model I**

**Null Hypothesis: No levels relationship**

Model I - WPI					Model II - CPI				
Test Statistic	Value	Signif.	I(0)	I(1)	Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic k	10.19 3	10%	2.72	3.77	F-statistic k	1.19 3	10% 5% 2.50% 1%	2.72 3.23 3.69 4.29	3.77 4.35 4.89 5.61
		5%	3.23	4.35					
		2.50%	3.69	4.89					
		1%	4.29	5.61					
t-Bounds Test		Null Hypothesis: No levels relationship			t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)	Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.93	10%	-2.57	-3.46	t-statistic	-0.79	10% 5% 2.50% 1%	-2.57 -2.86 -3.13 -3.43	-3.46 -3.78 -4.05 -4.37
		5%	-2.86	-3.78					
		2.50%	-3.13	-4.05					
		1%	-3.43	-4.37					

test for both the models showed that even up-to 36 months lag, there was no auto-correlation with the p value insignificant throughout laying above  $p \geq 0.5$ . The Breusch-Godfrey Serial Correlation LM Test using F-statistics and Chi-square were insignificant laying above  $p \geq 0.5$  for both the Models indicting the absence of serial correlation. The variance inflation

factor (VIF) of less than 2.5 for Model I and around 5.0 for Model II point to the absence of multicollinearity among the regressors while significant F-statistics for joint Wald Test of the coefficients for both the Models conforms the observed relationship in the regression, particularly, that between WPI and CPI vis-à-vis RE auction prices during the period under consideration.



## ***The low yield environment and Forex Reserves management\****

*Interest rates which have been on a declining trajectory over the last four decades in advanced economies, touched their historic lows in 2020. The prominent drivers of the declining trend in nominal yields are the sustained downward shift in real interest rates and low levels of inflation, given well anchored inflation expectations. The structural low yield environment may persist in the post COVID environment due to uncertainty about the growth outlook. This low yield environment has made it an arduous task for the Reserve Managers to generate reasonable returns on their foreign assets. This article highlights the scope for looking beyond traditional ways to manage foreign exchange reserves in order to augment portfolio returns without undermining the predominant goals of safety and liquidity.*

### **Introduction**

The short term and long-term interest rates in advanced economies have been witnessing a trend decline since early 1980s, for example, 10-year bond yield in the USA fell from a high of 15.80 per cent in 1981 to below 1 per cent in 2020. The policy rates have also fallen dramatically in the USA from around 19 per cent in 1981 to close to zero currently. Many other advanced economies like the Euro zone, Japan and Switzerland have had negative policy rates for years now. This ultra-low interest rate environment is a reflection of structural changes in the advanced economies and global financial markets, in particular well anchored low inflation/expected inflation, and trend decline in equilibrium real interest rates over the last 3 to 4 decades. This low yielding environment

warrants a relook at ways to enhance returns without compromising on the basic prudent investment principles of safety and liquidity.

The rest of the article is organised as follows. Section II analyses the nominal and real interest rates trends and discusses the determinants of equilibrium real interest rates. Section III extends the discussion to trends in inflation/inflation expectations and drivers of the same. Section IV examines the strategic response of reserve managers to the low yield environment based on some recent surveys. Section V presents some policy options for the reserve managers and Section VI concludes.

### **II. Trends and determinants of equilibrium real interest rates**

#### **(a) Trends**

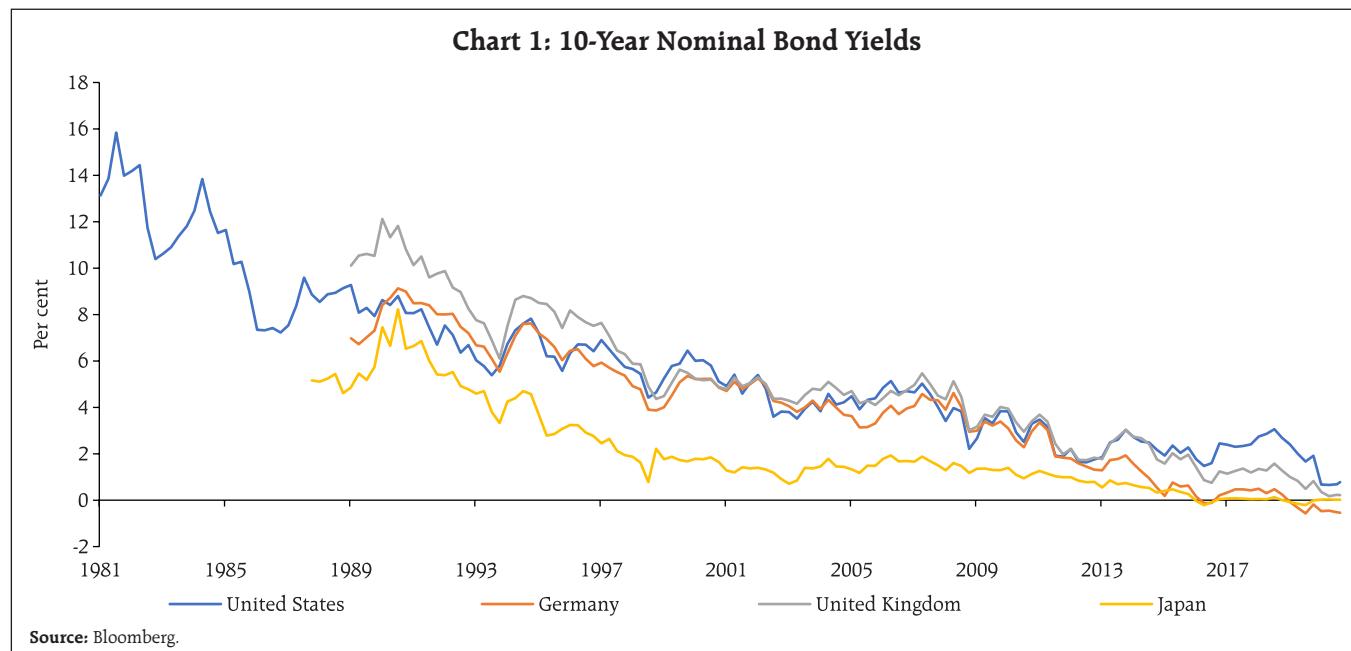
As mentioned earlier, the nominal long-term yields in the advanced economies have been declining in the last few decades (Chart 1). The real yields of the United States, Germany and Japan also show a declining trend since the early 1990s (Chart 2). The global trends in real interest rates, focusing on 13 advanced economies show that real ex post short-term and long-term interest rates have hovered in the neighborhood of zero percent over 2011 to 2019, substantially below the levels that prevailed over the previous three decades (Kiley, 2019).

#### **(b) Determinants of equilibrium real interest rates**

The equilibrium real interest rate has been defined in the literature as (i) the level of interest rate at which savings equal investments and (ii) the level of the real interest rate at which output is at its long-run potential. The definitions are equivalent from common notions of macroeconomic balance (Kiley, 2019). Several approaches have been adopted in the literature to make an assessment of the factors affecting the equilibrium real interest

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\* This article has been prepared by Ashish Saurabh and Nitin Madan of Department of External Investments and Operations. The views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

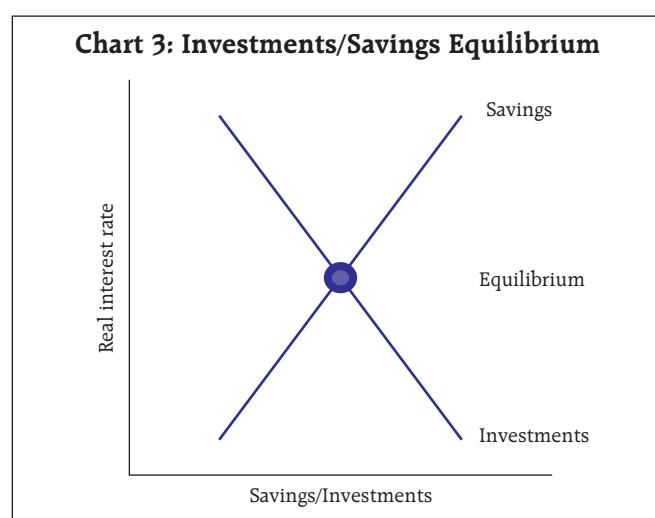
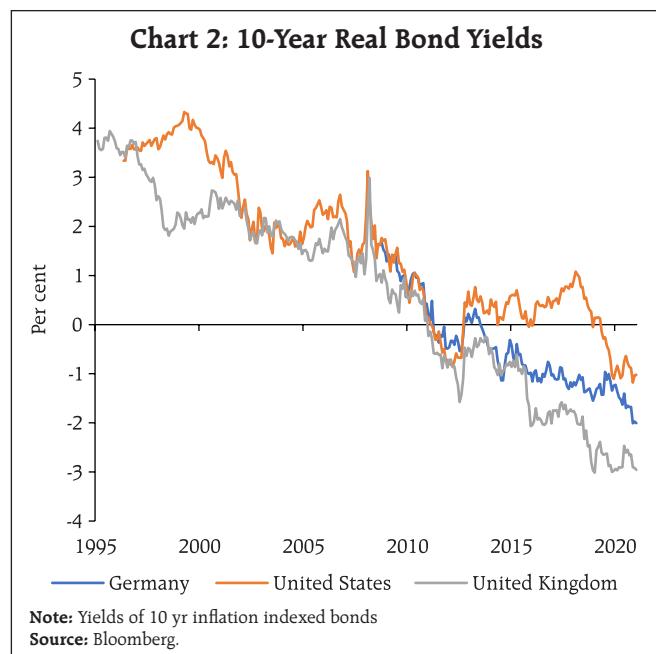


rate but most of them rely on the underlying simple model of supply and demand for loanable funds, as shown in Chart 3. The factors affecting the supply and demand have shifted these curves in the last few decades leading to notable downward shift in the equilibrium real interest rate.

Savings and investments depend on a variety of factors among which the following are commonly viewed as the possible determinants of equilibrium real interest rates. Apart from these, the academic research has highlighted the demand for safe assets as another possible determinant (Caballero *et al*, 2017)

#### i. Economic growth

One fundamental driver of real interest rates is the potential growth rate of the economy. A

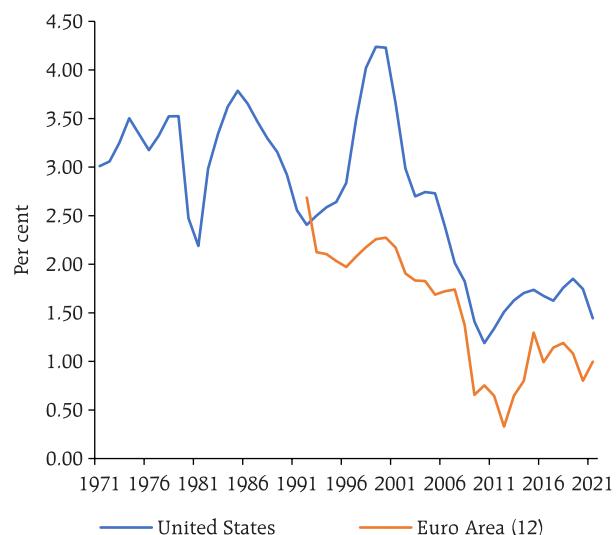


high-growth economy would require a higher real interest rate to encourage the volume of saving required for the high investment levels needed to sustain its pace. A sustained fall in potential growth rate of the major advanced economies has been observed over decades which can be attributed to a decline in total factor productivity growth and a corresponding decline in labour productivity growth (Lane, 2019) (Chart 4). A slower trend productivity growth decreases the required increase in the capital stock and consequently, lower investment demand and interest rates. Also, slower growth in the labour force decreases required increase in the capital stock, thus depressing interest rates.

## ii. Demographics and Income inequality

The demographics in advanced economies have been characterised by rising life expectancy over the last five to six decades, a trend which is expected to continue till at least 2050 (Chart 5). A higher life expectancy

**Chart 4: Potential GDP growth**

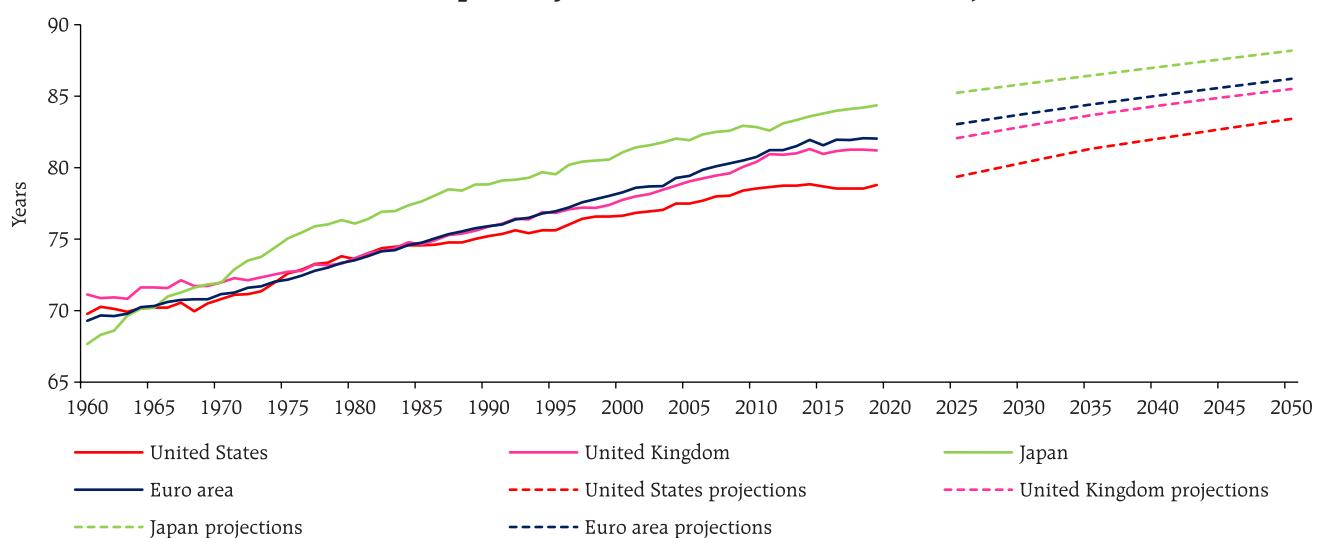


Note: Euro area growth based on twelve countries which initially joined Euro.

Source: FRED database, European Commission.

implies people will live longer and would spend more years in retirement, assuming constant working years. This is likely to increase aggregate savings as working age population would save more in anticipation of longer retirement. Also, an ageing population along with low fertility rates in advanced

**Chart 5: Life Expectancy at Birth: Historical data and Projections**



Note: Latest historical observation of 2018.

Source: World Bank.

economies would mean lower proportion of working age population. This suggests that ratio of installed capital relative to work force would rise, thus adversely impacting the investment demand.

However, it has been argued in academic research that this effect is only transitional and partial as an ageing population along with constant working years would increase the dependency ratio leading to more dissaving, but these effects occur over very long periods and involve complex dynamics (Kiley, 2019). Further, the increase in the capital-labour ratio associated with a sustained phase of higher saving and a contraction in the workforce will weigh on the level of real interest rates for a considerable time (Lane, 2019).

Apart from demographics, distribution of wealth also affects the real rates through its impact on aggregate savings. Increased inequality is likely to boost savings and lower interest rates, as the propensity to consume out of income for the rich is expected to be lower than that for other segments of the population (Dynan *et al*, 2004).

### iii. Demand for safe financial assets

The global demand for safe assets has outpaced its supply in the last few decades. The major hallmark of this growing shortage has been a steady rise in the prices of safe assets and thus, decline in interest rates. Also, the term premia for many of these safe assets have declined and are even negative in many economies.

The key drivers behind this increased net demand for safe assets are as follows. First, there has

been a huge accumulation of safe assets by emerging economies in the form of foreign exchange reserves. Second, ageing has influenced portfolio preferences of investors towards lower-risk assets. Third, the regulatory requirements introduced in the aftermath of Global Financial Crisis has also fueled demand for safe assets by financial institutions. Fourth, central banks in advanced economies have acquired a substantial portion of safe assets as part of their unconventional easing of monetary policy.

### **III. Causes of low inflation/ inflation expectations**

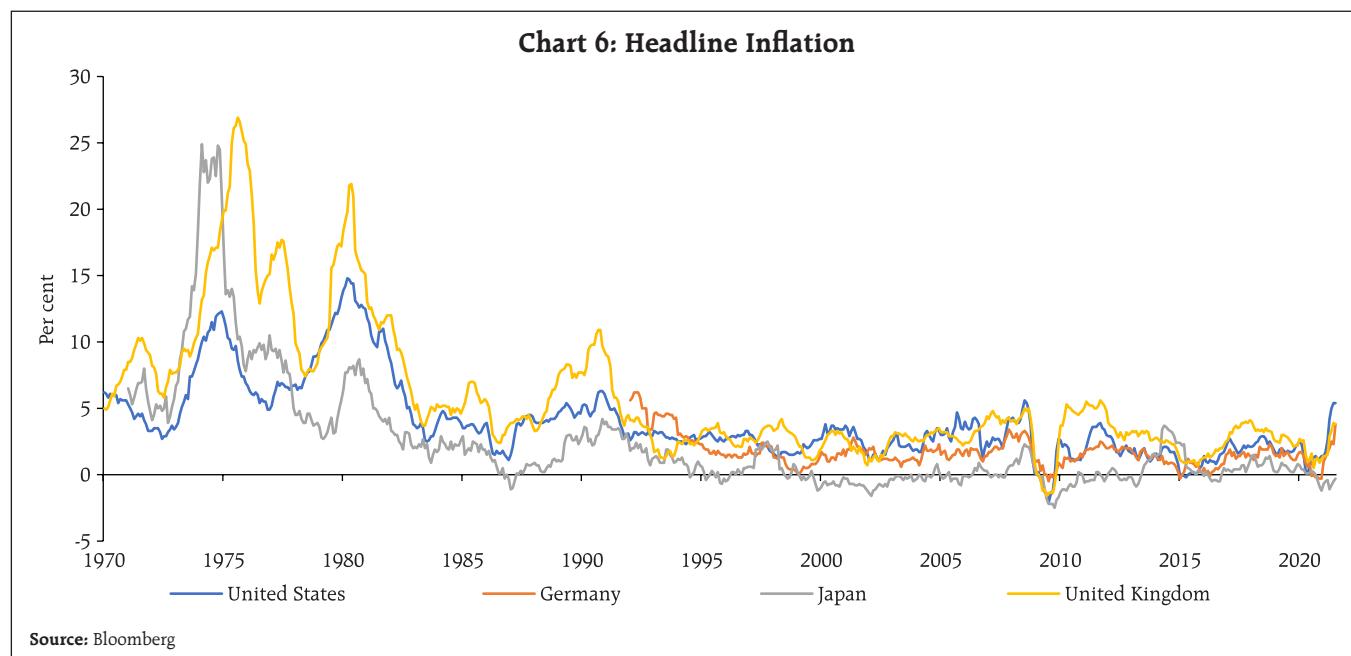
Over the last four decades, most parts of the world have witnessed a trend towards lower inflation rates (Chart 6). Inflation has remained at very low and stable levels for more than a decade now in advanced economies and is expected to remain so for the next few years, as evidenced by the inflation expectations. This stubbornly low inflation over the last decade is at odds with one of the longest periods of economic growth, highly expansionary monetary policies and multi-decade low level of unemployment. We try to highlight some of the reasons which seem to have played a major role in propagating the low inflation environment.

#### a) *Cross border trade*

The surge in cross border trade could be considered as the single biggest influence on low inflation across the globe. Trade has grown from 27 per cent of world GDP in 1970 to 59 per cent in 2018<sup>1</sup>. Globalisation has brought down the price of manufactured goods as their production has shifted to economies with low labour costs. Global factors contribute to a significant part of inflation in countries which participate more in global supply chains.

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<sup>1</sup> World Bank national accounts data



*b) Commodity prices*

Commodity prices have had a softening impact on inflation for decades now. The boom and bust cycle in oil prices led to a surge in inflation to unprecedented levels in 1970s, while their declines in early 2010s contributed to deflation in Europe. The contribution of the oil price, however, to global inflation has been declining since 2011. The demand for other commodities like metals has also impacted inflation. As growth slowed in the emerging economies post Global Financial crisis, the demand for commodities and thus, commodity prices remained suppressed.

*c) Low wage growth*

Wage growth in the last few years has been weaker than in previous recoveries, given the declining trend in the unemployment rate. Various factors have led to this. Productivity gains in the recent years have been lower in the major advanced economies. Across the advanced economies, low wage growth has also been a drag on inflation on account of decline in bargaining power of trade unions and a rise in labour participation rates.

In line with the increased importance of global factors, inflation rates and wage growth have been more closely synchronised among advanced economies in recent years.

*d) The role of inflation expectations*

Inflation expectations of the economic agents have an important influence on the inflationary pressures in the economy. If agents remain confident of central banks' commitment to price stability, they would consider the volatility in inflation as transitory and cyclical pressures on inflation will be more muted. Over the last decade, the downward trend in inflation and increasing adoption of inflation targeting regimes has led to a decline in inflation expectations in many advanced economies.

*e) Velocity of money*

The central banks have increased the supply of money in the economies at an unprecedented pace since 2008, which should have led to increased inflation as per the Quantity Theory of Money. However, inflation has remained low

during this period. Such a scenario can occur if the velocity of money falls, *for example*, in the United States, the velocity of money fell from 10.70 in Q4, 2007 to 1.20 in Q1, 2021.<sup>2</sup> The fall in velocity can be explained by the private sector's willingness to hoard money instead of spending it, bleak economic outlook and very low/negative rates inducing investors to move away from interest-bearing assets. A decline in velocity could also be one of the reasons for persistently low rates of inflation in advanced economies.<sup>3</sup>

#### **IV. Impact of the low yield environment on reserve management**

The foregoing discussion on real interest rate and inflation illustrates the drivers of low nominal yields across the developed economies. This low yield environment has made it an arduous task for the asset managers in general and reserve managers in particular (who tend to hold a significant portion of their reserves till maturity) to generate reasonable returns. This situation has been further exacerbated by the COVID -19 pandemic, which has resulted in major loss of output across the world and led to adoption of unprecedented expansionary monetary and fiscal policies. The remaining part of this section looks at the changing preferences of the reserve managers towards various currencies for diversification purposes and the impact of the low yields on reserve management strategies.

*(a) International Monetary Fund's currency composition of official foreign exchange reserves (COFER) statistics*

The IMF COFER statistics, March 2021 show that the USD continues to be the dominant currency in the composition of global foreign exchange reserves with approximately 59.5 per cent

<sup>2</sup> Velocity of M1 money stock. The data has been taken from the website of Federal Reserve Bank of St. Louis.

<sup>3</sup> "What Does Money Velocity Tell Us about Low Inflation in the U.S?", by Yi Wen and Maria A. Arias.

**Table 1: Global foreign exchange reserves by currency over time (share in per cent)**

Year	USD	EUR	GBP	JPY	AUD	CAD	CHF	RMB	Others	Allocated Reserves
2010	62.3	26.3	4.1	3.3	NA	NA	0.1	NA	3.8	56.4
2011	61.8	25.6	4.0	3.7	NA	NA	0.2	NA	4.8	54.9
2012	61.6	24.4	4.0	4.0	1.5	1.4	0.2	NA	5.0	55.3
2013	61.8	23.8	3.9	3.8	1.7	1.8	0.3	NA	3.0	54.1
2014	64.0	22.3	3.8	3.6	1.7	1.8	0.2	NA	2.7	58.6
2015	65.6	19.7	4.4	3.7	1.7	1.8	0.3	NA	2.8	63.8
2016	65.2	19.4	4.5	4.0	1.7	1.9	0.2	1.1	2.9	74.7
2017	63.7	19.9	4.4	4.6	1.8	2.0	0.2	1.1	2.3	84.2
2018	62.2	20.4	4.5	4.9	1.7	1.9	0.2	1.7	2.5	92.2
2019	61.4	20.4	4.5	5.6	1.7	1.9	0.1	1.9	2.5	93.8
2020	60.7	20.5	4.5	5.8	1.7	1.9	0.2	2.1	2.5	93.6
2021*	59.5	20.6	4.7	5.9	1.8	2.1	0.2	2.4	2.7	93.4

\*AUD and CAD numbers were included in Others prior to 2012 and RMB in Others prior to 2016.

#Figures for 2021 are based on Q1, 2021 data.

Source: IMF COFER statistics, 31 Mar 2021.

allocation (Table 1). Also, the EUR composition has shown little variation over the last three years with a share of approximately 20 per cent. Negative rates in the major European countries like Germany, France etc. have weighed on the Euro's performance as a reserve currency. The share of RMB (Renminbi) as part of global reserves has gradually grown to 2.4 per cent but remains small as reserves managers are cautious about investing in Chinese assets and low level of liquidity makes trading in Chinese sovereign bonds challenging.

*(b) Recent surveys of Reserve Managers*

According to the *Central Banking's Trends in Reserve management 2021 survey*<sup>4</sup>, reserve managers have found the reduction in yields since March 2020 as the most challenging aspect of their work. The traditional risks that gained priority during the COVID-19 pandemic include reduced market liquidity, pressure on reserve levels, credit deterioration, etc. The survey

<sup>4</sup> "Trends in reserve management: 2021 survey results", Centralbanking.com

with 78 respondents, which was conducted in February- March 2021, indicates that the Reserve managers envisage that the effects of COVID-19 to continue to be felt in remote working, tactical and strategic asset allocation (TAA, SAA), risk appetite and frameworks.

However, at the same time, the structural low yield environment and accommodative monetary policies introduced across the world in response to the coronavirus pandemic have also reinforced the multi-decade trend towards further asset diversification. Most of the participants in this survey accepted that the low yield environment, notably in major reserve currencies, has changed the reserve management policies and practices in favour of i) investments in new geographies/markets ii) investments in new asset classes iii) investment in more currencies and iv) changes in minimum credit rating accepted. The underlying theme throughout the last decade to deal with the low yield environment has been diversification, by means of adding exposure to new currencies, asset classes, etc.

Another recent survey, *UBS Annual Reserve Management Seminar Survey* conducted during April – June 2021 indicates that lower/negative yields remain the top worry of reserve managers in 2021 and central banks are "still diversifying away from more conservative fixed income assets"<sup>5</sup>. The investment options mentioned by participants to diversify their portfolios included passive equity, corporates, emerging market local-currency debt and gold. This is also reflected in 13 per cent of reserve managers reporting that they recently moved, or considered moving, passively managed assets to active management strategies.

## V. Policy options for Reserve managers

Most market participants expect the structural low yield environment to persist for a considerable time in future. In light of the likely persistence of various structural reasons for low yields, it is imperative that reserve managers look beyond the traditional approaches for the management of reserves to maintain and enhance returns. We highlight some alternate ways for reserves management in this section, with the caveat that not all proposals will suit every reserve manager due to the unique constraints faced by each one of them. Different reserve managers are in different positions with regard to their respective reserve management style and risk appetite. The risk appetite of a reserve manager to include various instruments in portfolio management depends on various factors like adequacy of reserves and sources of accretion to reserves, besides the overriding emphasis on liquidity and safety.

### a) Increasing duration of portfolio:

The first and foremost way to tackle the low yielding environment to increase return would be to increase duration of the portfolio. The countries with adequate reserves have sufficient cushion to take on more duration risk. Increasing duration of the portfolio is the easiest and immediate step that can be taken to enhance return by some basis points. This should be combined with increasing investments in longer maturities. This would help the reserve managers utilize the opportunities at the steeper part of the curve given that the short end of the yield curve has been getting flatter.

### b) Investment in new products/asset classes:

Investment in new asset classes entail investing in products beyond the traditional investment avenues. While some of them are already being used by reserve managers, they seem to be very

<sup>5</sup> <https://www.ubs.com/global/en/asset-management/global-sovereign-markets/reserve-management-seminar-highlights-2021/27th-annual-reserve-management-seminar-survey.html>

few in number. Certain products may be novel in nature as surveys and anecdotal evidence do not suggest usage of these products by the reserve managers.

i. FX Swaps:

The demand of dollar funding through FX swaps by institutional investors such as corporates, pension funds, etc. outside the United States has grown over the last decade. These investors hedge their dollar assets generally through short term FX swaps. The 3 month FX swap basis points of various currencies against US dollar is illustrated in Chart 7.

This has been calculated as the spread between three-month US dollar Libor and three-month FX swap implied US dollar rates. The chart implies that more the FX swap basis point goes below zero, higher is the return for an investor lending dollars in the swap market.

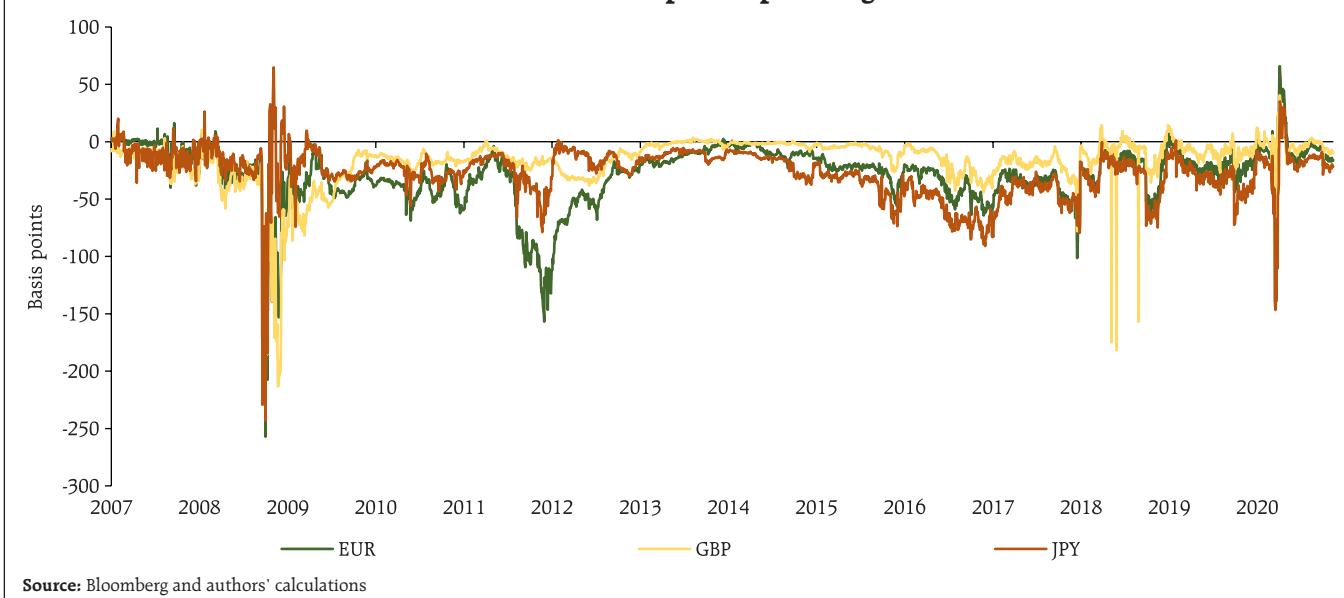
Given that central banks are natural holders of large US dollar balances, as is clear from

the COFER data, it puts them in a unique position to employ dollars in FX swap market for a short term to generate higher return in a riskless manner. A number of central banks like Australia and Germany have been using a portion of their reserves by exploiting this FX swap market.

ii. Repo transactions:

Reserve managers are holders of large amount of securities, most of which are held to maturity. The reserve managers can use these idle securities by lending them in the repo market generally as specials or also through General Collateral to generate cash, which they can either put in higher yielding instruments matching the tenor of the repo or invest in FX swaps as mentioned above. The Reserve managers can also use the reverse repo facility to employ their excess cash for a short tenor in the repo market and add to income on their portfolio. For reserve managers already using the repo market, the operational efficiency of the repo lending

**Chart 7: Three month FX swap basis points against US dollar**



could be enhanced by using tri party repos /sponsored repos to scale up their repo operations.

iii. Dual Currency deposits:

A dual currency deposit (DCD, also known as Dual Currency Instrument or Dual Currency Product) is a derivative instrument which combines a money market deposit with a currency option to provide a higher yield than that available for a standard deposit. If an investor has a view on the initial investment currency, a dual currency strategy allows the investor to benefit from higher returns. The returns are higher than the returns on normal deposits in compensation for the higher risks that are associated with DCDs, as the product involves assuming foreign exchange risk, in addition to the risks normally associated with deposits.

iv. Equity Index funds:

Investment in equities is considered to be risky, especially for a central bank, which is responsible for safeguarding the reserves. However, investment of a small portion of the reserves in an index fund has the potential to augment the return of the portfolio. Investment in S&P 500 across various business cycles and financial booms and busts reveal that the CAGR return in 5 years, 10 years, 15 years, 20 years, 25 years and 30 years would have been 13.3 per cent, 11.1 per cent, 7.3 per cent, 5.4 per cent, 7.4 per cent and 8.5 per cent respectively. This implies that if held for a long to very long period of time, despite volatility in the interim, it can not only preserve the capital but also fetch a return much higher than most of the investments.

The return on the S&P 500 equity index funds is comparable to that on Gold over a long period of time. A number of central banks are increasingly making investment in equities in some form or the other. Swiss National Bank, for example, has an investment of 20 per cent of its reserves in equities.

v. Increase credit risk of the portfolio:

The regional governments of the major advanced economies issue bonds which, in many countries, carry the implicit guarantee of the sovereign. They also yield better return than the sovereigns. Reserve managers could invest a small percentage of their reserves in such sub-national debt securities across the developed countries like Germany, Australia, Canada, etc and US agency bonds. Similarly, even the best rated supranational agencies yield better than sovereigns in most of the cases. If reserve managers can go further down the credit curve, then they can earn even higher yield.

c) *Active management of gold:*

Central banks own almost 35,000 tonnes of gold<sup>6</sup> which is around 17 per cent of worldwide available above-ground stocks. While gold acts as a safe haven and provides diversification benefits to the portfolio, it does not offer any yield. Holding physical gold, in fact, comes at a cost. The active management of gold can, however, yield a decent return to the central banks beyond capital gains. We discuss some such avenues as under:

i. Gold deposits:

Central banks being owners of such huge amount of physical gold, can lend it out to the

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<sup>6</sup> "Gold deposit rates- a guidance paper"- World Gold Council.

bullion banks at the gold deposit rate set by the bullion banks for a short period, typically 1 month, 3 months or 12 months. At the end of the period, the bullion banks return the gold along with interest in the form of gold or currency to the depositor. The gold lent by the central bank in this case is akin to any other term deposit done by central bank and is uncollateralised in nature.

#### ii. Gold swaps:

Gold swaps are similar to repo transactions *i.e.* they are collateralised. In gold swaps, central banks lend/sell gold to bullion banks for a specified period and receive USD in return for the same. Central banks can employ these dollars at the LIBOR while paying to the bullion bank the interest equivalent to Gold offered forward rates (GOFO). Essentially, a central bank earns Libor- GOFO which is termed as Gold lease rate. This rate varies and is contingent on various factors such as outlook for gold, demand for borrowing,

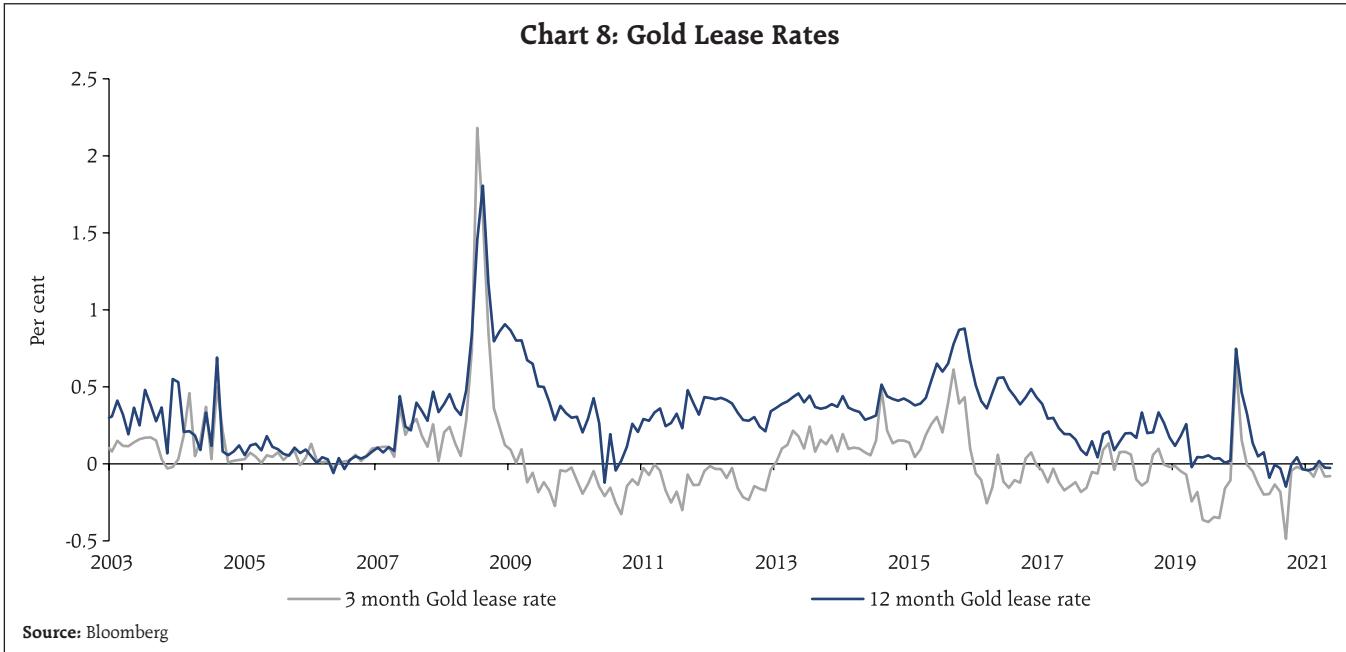
real interest rates etc. The movement of gold lease rates over the years is depicted in Chart 8.

#### iii. Gold ETFs:

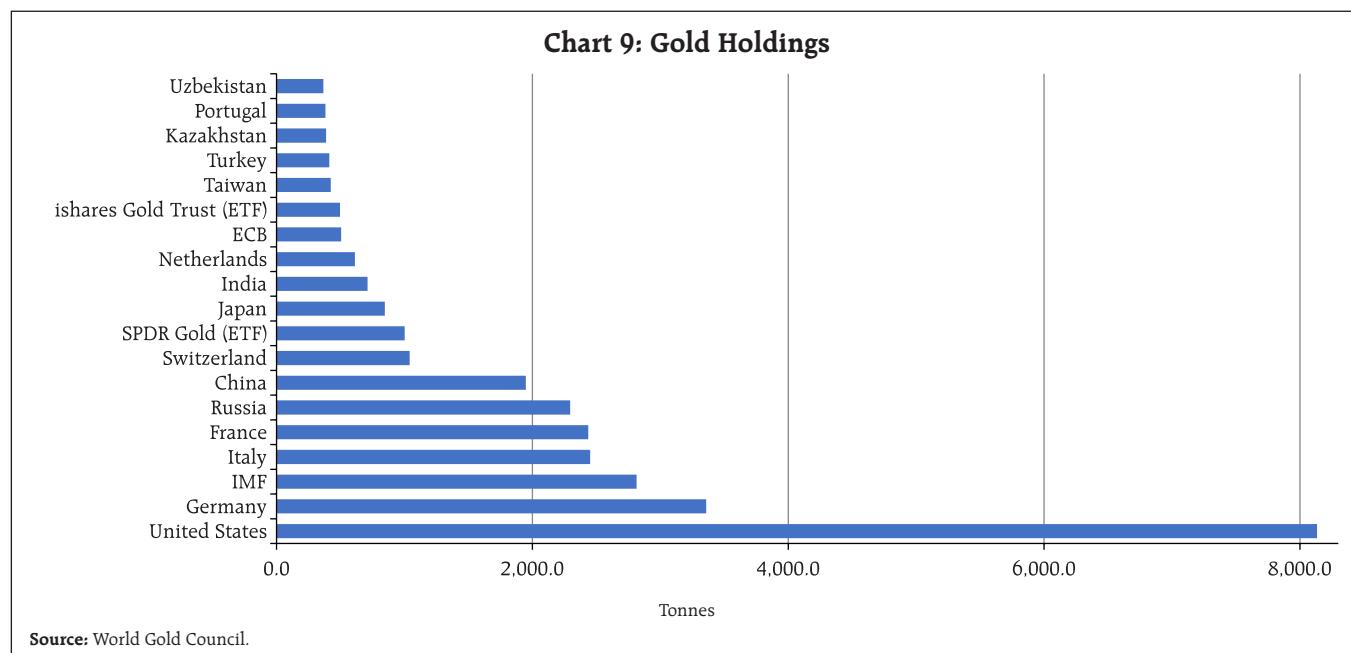
Gold ETF, or Exchange Traded Fund, is a commodity-based Mutual Fund that invests in assets like gold. These ETFs are backed by physical gold and allow investors to track the price of gold. They provide an easy way to access the properties and security of physical gold ownership but without the need to arrange for storage and insurance separately.

ETFs have been playing a key role in the movement of gold price and have become a big part of the gold market. Total Assets Under Management (AUMs) of gold ETFs stood at 3,611 tonnes of gold worth about \$211 bn as on August 31, 2021<sup>7</sup>. SPDR Gold Shares, a Gold ETF which is a partnership between State Street Bank and the World Gold Council, has the ninth largest holding of gold in the world (Chart 9).

**Chart 8: Gold Lease Rates**



<sup>7</sup> World Gold Council



Central banks could use the Gold ETFs for trading purposes. They can execute their short/medium term view on gold and exploit the opportunities presented by the market as it may be operationally more convenient than trading in physical gold. The cash settlement nature of this product can help the reserve managers avoid the cost of storage, insurance etc.

d) *Investment in new markets:*

Reserve managers usually invest in highly rated sovereigns like G10 countries as they have deep bond markets and meet safety and liquidity criteria of the reserve managers. However, there are some countries which are relatively stable financially, are highly rated and offer better yields than some of the G7 countries. While these countries do not have very deep sovereign bond markets, a reserve manager could invest a small portion of their reserves in these markets and generate that extra yield.

Another way to generate higher return is lowering the credit rating requirement and investing in emerging markets which provide higher yield. This, however, entails a higher exposure to currency risk as their currencies can be volatile. To mitigate that, the reserve managers could explore investing in US/Euro denominated debt of these countries.

Various options through which a reserve manager could invest in these markets are as under:

- i) Direct investment: While this may seem to be the easiest way, it requires more expertise to invest in such markets directly since these markets are not as liquid as G7 countries. It may not be as easy to move in and out of these markets as timing plays an important role, especially in crisis situations, e.g., Global Financial Crisis (GFC) in 2008-09.
- ii) Passive funds: There are various emerging market funds which invest in sovereign

bonds of emerging markets across the spectrum of ratings and liquidity. An allocation to these passive funds can help the reserve managers earn higher yield.

- iii) Exchange Traded Funds (ETFs): Many of these passive funds also trade on the prominent stock exchanges like NYSE. The benefit of the ETFs over the passive funds is that these can be bought/sold at the real time prices on the stock exchanges at any time during the market hours.
- iv) Separately Managed funds/Customised funds/ETFs: The passively managed funds generally include sovereigns of various ratings, including some below investment grade. In case a reserve manager has rating or other constraints which prohibit them from investment in such countries, it would not be possible to invest in these funds. In such cases, reserve managers can opt for customised funds, which would meet all their criteria like countries, allocation to each country, duration, etc. Such funds could also be traded as ETFs for more liquidity.
- v) Total Return Swaps: Under this mechanism, a reserve manager could enter into a swap agreement in which it would receive a payment based on the return of the underlying fund (includes both the income and capital gains) on a fixed interval while it makes payments based on a benchmark rate. This allows the reserve manager to get exposure to the emerging markets without much operational hassle.

## VI. Conclusion

Declining real interest rates, low levels of inflation and well anchored inflation expectations explain the sustained easing of nominal yields in the advanced economies. The factors that affect real interest rates are potential growth rates, demographic factors, income inequality and demand for safer assets. The structural changes in these factors have led to the decline in equilibrium real rates and are expected to keep them low for the considerable future. The inflation outlook is also benign because of low realised inflation in the past decade and firm anchoring of inflation expectations by central banks.

Asset managers and reserve managers across the world face a challenging task in maintaining and enhancing returns in a low yield environment. Some reserve managers are dealing with low yields through diversification, by means of adding new currencies and asset classes to their portfolio. We highlight that reserve managers can deal with the low yield environment by increasing the duration of their portfolios, investing in new asset classes, new markets and more active management of their gold stocks. The choice of strategy, however, would require to be tailored to suit the risk appetite, investment priorities, skill sets and operational capabilities of individual institutions.

## References

- Caballero, R.J., Farhi, E. and Gourinchas, P.O. (2017), 'The safe assets shortage conundrum'. *Journal of Economic Perspectives*.
- Clarida, R. H. (2018), 'The global factor in neutral policy rates: Some implications for exchange rates, monetary policy, and policy coordination', *BIS Working Paper*, No 732, Bank for International Settlements.
- Dynan, K.E., Skinner, J. and Zeldes, S.P. (2004), 'Do the rich save more?' *Journal of political Economy*.

Kiley, M. T. (2019), 'The Global Equilibrium Real Interest Rate: Concepts, Estimates, and Challenges', *Finance and Economics Discussion Series*, Federal Reserve Board, Washington, D.C.

Lane, Philip R., (2019) , 'Determinants of the real interest rate', Speech at the National Treasury Management Agency, Dublin

Nick Carver (2021), 'Trends in reserve management: 2021 survey results', *Centralbanking.com*, 17 May 2021

Reserve Bank of Australia (2019), 'Box B: Why Are Long-term Bond Yields So Low?', *Statement of Monetary Policy*, May 2019

Stefan Avdjiev, Egemen Eren and Patrick McGuire (2020), 'Dollar funding costs during the covid-19 crisis through the lens of the FX swap market', *BIS Bulletin No 1, 2020*

Tigran Poghosyan (2012), 'Long Run and short run determinants of Sovereign bond yields in advanced economies', *IMF Working paper*.

The Economist.(2019), ' Low inflation is a global phenomenon with global causes'

World Gold Council (2020), Gold Deposit rates- a guidance paper.



## 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



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**Notes:** .. = Not available.  
 - = Nil/Negligible.  
 P = Preliminary/Provisional. PR = Partially Revised.

**No. 1: Select Economic Indicators**

Item	2020-21	2019-20		2020-21		2021-22	
		Q4		Q1		Q4	
		1	2	3	4	5	
<b>1 Real Sector (% Change)</b>							
1.1 GVA at Basic Prices		-6.2	3.7	-22.4	3.7	18.8	
1.1.1 Agriculture		3.6	6.8	3.5	3.1	4.5	
1.1.2 Industry		-6.4	-3.2	-31.0	5.5	40.4	
1.1.3 Services		-8.4	5.6	-24.9	3.2	16.1	
1.1a Final Consumption Expenditure		-7.3	3.3	-19.9	6.4	13.8	
1.1b Gross Fixed Capital Formation		-10.8	2.5	-46.6	10.9	55.3	
	2020-21	2020		2021			
		Jul.	Aug.	Jul.	Aug.		
	1	2	3	4	5		
1.2 Index of Industrial Production		-8.4	-10.5	-7.1	11.5	11.9	
<b>2 Money and Banking (% Change)</b>							
2.1 Scheduled Commercial Banks							
2.1.1 Deposits		11.4	11.1	10.9	9.8	9.5	
2.1.2 Credit		5.6	5.7	5.5	6.1	6.7	
2.1.2.1 Non-food Credit		5.5	5.6	5.5	6.2	6.7	
2.1.3 Investment in Govt. Securities		19.3	20.8	21.8	8.2	5.3	
2.2 Money Stock Measures							
2.2.1 Reserve Money (M0)		18.8	14.9	14.7	16.8	15.2	
2.2.2 Broad Money (M3)		12.2	13.2	12.6	9.9	9.5	
<b>3 Ratios (%)</b>							
3.1 Cash Reserve Ratio		3.50	3.00	3.00	4.00	4.00	
3.2 Statutory Liquidity Ratio		18.00	18.00	18.00	18.00	18.00	
3.3 Cash-Deposit Ratio		4.2	3.7	3.7	5.0	4.8	
3.4 Credit-Deposit Ratio		72.4	72.6	72.1	70.2	70.2	
3.5 Incremental Credit-Deposit Ratio		37.4	-15.0	-25.4	-8.9	-12.9	
3.6 Investment-Deposit Ratio		29.5	30.3	30.7	29.9	29.6	
3.7 Incremental Investment-Deposit Ratio		46.8	93.1	101.9	41.6	32.3	
<b>4 Interest Rates (%)</b>							
4.1 Policy Repo Rate		4.00	4.00	4.00	4.00	4.00	
4.2 Reverse Repo Rate		3.35	3.35	3.35	3.35	3.35	
4.3 Marginal Standing Facility (MSF) Rate		4.25	4.25	4.25	4.25	4.25	
4.4 Bank Rate		4.25	4.25	4.25	4.25	4.25	
4.5 Base Rate		7.40/8.80	7.40/9.00	7.40/9.00	7.40/8.80	7.40/8.80	
4.6 MCLR (Overnight)		6.55/7.05	6.65/7.30	6.65/7.20	6.55/7.00	6.55/7.00	
4.7 Term Deposit Rate >1 Year		4.90/5.50	5.10/5.50	5.00/5.50	4.90/5.50	4.90/5.50	
4.8 Savings Deposit Rate		2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00	
4.9 Call Money Rate (Weighted Average)		3.25	3.46	3.43	3.21	3.19	
4.10 91-Day Treasury Bill (Primary) Yield		3.32	3.30	3.24	3.39	3.30	
4.11 182-Day Treasury Bill (Primary) Yield		3.47	3.39	3.49	3.53	3.45	
4.12 364-Day Treasury Bill (Primary) Yield		3.83	3.52	3.59	3.73	3.65	
4.13 10-Year G-Sec Par Yield (FBIL)		6.34	5.78	6.12	6.22	6.27	
<b>5 Reference Rate and Forward Premium</b>							
5.1 INR-US\$ Spot Rate (Rs. Per Foreign Currency)		72.40	74.77	73.35	74.39	74.13	
5.2 INR-Euro Spot Rate (Rs. Per Foreign Currency)		85.31	88.87	87.07	88.39	87.20	
5.3 Forward Premium of US\$ 1-month (%)		6.80	3.61	3.76	3.55	3.40	
3-month (%)		5.64	3.74	3.90	3.82	3.56	
6-month (%)		5.47	3.80	4.01	4.01	3.76	
<b>6 Inflation (%)</b>							
6.1 All India Consumer Price Index		6.18	6.7	6.7	5.6	5.3	
6.2 Consumer Price Index for Industrial Workers		5.03	5.3	5.6	5.3	4.8	
6.3 Wholesale Price Index		1.29	-0.2	0.4	11.2	11.4	
6.3.1 Primary Articles		1.71	1.6	1.9	5.7	6.2	
6.3.2 Fuel and Power		-7.99	-9.8	-9.1	26.0	26.1	
6.3.3 Manufactured Products		2.75	0.6	1.4	11.2	11.4	
<b>7 Foreign Trade (% Change)</b>							
7.1 Imports		-17.08	-29.6	-22.1	61.6	51.7	
7.2 Exports		-7.08	-9.9	-12.2	49.8	45.8	

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.

## Reserve Bank of India

## No. 2: RBI - Liabilities and Assets \*

Item	(₹ Crore)						
	As on the Last Friday/ Friday						
	2020-21	2020	2021				
		Sep.	Aug. 27	Sep. 3	Sep. 10	Sep. 17	Sep. 24
	1	2	3	4	5	6	7
<b>1 Issue Department</b>							
<b>1.1 Liabilities</b>							
1.1.1 Notes in Circulation	2831727	2656476	2916737	2911885	2923865	2911532	2897815
1.1.2 Notes held in Banking Department	11	13	15	13	13	12	15
<b>1.1/1.2 Total Liabilities (Total Notes Issued) or Assets</b>	<b>2831738</b>	<b>2656489</b>	<b>2916752</b>	<b>2911897</b>	<b>2923878</b>	<b>2911543</b>	<b>2897829</b>
<b>1.2 Assets</b>							
1.2.1 Gold	106555	115902	111366	111933	111077	108661	109138
1.2.2 Foreign Securities	2724437	2539862	2804667	2799258	2812111	2802205	2788032
1.2.3 Rupee Coin	746	725	719	706	690	677	659
1.2.4 Government of India Rupee Securities	–	–	–	–	–	–	–
<b>2 Banking Department</b>							
<b>2.1 Liabilities</b>							
2.1.1 Deposits	1504697	1311570	2011955	2083415	2079517	2080855	2097054
2.1.1.1 Central Government	100	100	101	100	100	101	101
2.1.1.2 Market Stabilisation Scheme	42	42	42	42	42	42	42
2.1.1.3 State Governments	542693	429915	641437	662291	631652	676407	638826
2.1.1.4 Scheduled Commercial Banks	6529	5213	6682	7106	11208	6902	7014
2.1.1.5 Scheduled State Co-operative Banks	3204	2453	3546	3771	3594	3609	3431
2.1.1.6 Non-Scheduled State Co-operative Banks	31820	26029	37424	36523	36906	38248	38104
2.1.1.7 Other Banks	895440	843575	1292462	1333664	1350295	1320316	1361253
2.1.1.9 Financial Institution Outside India	24868	4243	30259	39917	45719	35230	48283
2.1.2 Other Liabilities	1343670	1383243	1318100	1304939	1324461	1312247	1317715
<b>2.1/2 Total Liabilities or Assets</b>	<b>2848367</b>	<b>2694813</b>	<b>3330055</b>	<b>3388354</b>	<b>3403978</b>	<b>3393102</b>	<b>3414769</b>
<b>2.2 Assets</b>							
2.2.1 Notes and Coins	11	13	15	13	13	12	15
2.2.2 Balances held Abroad	1204135	1169932	1435914	1461906	1472444	1472887	1491512
2.2.3 Loans and Advances							
2.2.3.1 Central Government	–	–	–	–	–	–	–
2.2.3.2 State Governments	1674	10516	3080	10550	12260	13300	7976
2.2.3.3 Scheduled Commercial Banks	90275	121495	91806	91880	92420	92398	92382
2.2.3.4 Scheduled State Co-op.Banks	–	35	35	35	35	35	35
2.2.3.5 Industrial Dev. Bank of India	–	–	–	–	–	–	–
2.2.3.6 NABARD	26422	25286	16772	21830	21830	21830	21830
2.2.3.7 EXIM Bank	–	–	–	–	–	–	–
2.2.3.8 Others	6678	12776	6634	6657	5057	5057	3757
2.2.3.9 Financial Institution Outside India	24858	15290	28450	39907	45831	35345	44669
2.2.4 Bills Purchased and Discounted							
2.2.4.1 Internal	–	–	–	–	–	–	–
2.2.4.2 Government Treasury Bills	–	–	–	–	–	–	–
2.2.5 Investments	1331671	1187027	1577196	1583576	1582165	1581656	1578893
2.2.6 Other Assets	162643	152443	170152	172001	171924	170582	173701
2.2.6.1 Gold	146572	149069	164566	166119	165912	164038	166849

\* Data are provisional

### No. 3: Liquidity Operations by RBI

(₹ Crore)

Date	Liquidity Adjustment Facility				MSF	Standing Liquidity Facilities	Market Stabilisation Scheme	OMO (Outright)		Long Term Repo Operations &	Targeted Long Term Repo Operations #	Special Long-Term Repo Operations for Small Finance Banks	Special Reverse Repo ₹	Net Injection (+)/ Absorption (-) (1+3+5+6+9+10+ 11+12-2-4-7-8-13)
	Repo	Reverse Repo	Variable Rate Repo	Variable Rate Reverse Repo				Sale	Purchase					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Aug. 1, 2021	-	2830	-	-	108	-	-	-	-	-	-	-	-	-2722
Aug. 2, 2021	-	641963	-	-	0	-	-	-	625	-	-	-	-	-641338
Aug. 3, 2021	-	655282	-	-	0	-	-	-	-	-	-	-	-	-655282
Aug. 4, 2021	-	653431	-	-	0	-	-	-	-	-	-	-	-	-653431
Aug. 5, 2021	-	678993	-	-	0	-	-	-	-	-	-	-	-	-678993
Aug. 6, 2021	-	604095	-	-	66	-	-	-	-	-	-	-	-	-604029
Aug. 7, 2021	-	38396	-	-	145	-	-	-	-	-	-	-	-	-38251
Aug. 8, 2021	-	3495	-	-	5	-	-	-	-	-	-	-	-	-3490
Aug. 9, 2021	-	630410	-	-	0	-	-	-	170	-	-	-	-	-630240
Aug. 10, 2021	-	653287	-	-	0	-	-	-	-	-	-	-	-	-653287
Aug. 11, 2021	-	643747	-	-	14	-	-	-	-	-	-	-	-	-643733
Aug. 12, 2021	-	640362	-	-	0	-	-	-	-	-	-	-	-	-640362
Aug. 13, 2021	-	579411	-	250029	196	-	-	-	25000	-	-	-	4833	-809077
Aug. 14, 2021	-	3385	-	-	117	-	-	-	-	-	-	-	-	-3268
Aug. 15, 2021	-	1490	-	-	42	-	-	-	-	-	-	-	-	-1448
Aug. 16, 2021	-	62341	-	-	2532	-	-	-	-	-	-	-	-	-59809
Aug. 17, 2021	-	631751	-	-	48	-	-	-	-	-	-	-	250	-631453
Aug. 18, 2021	-	583509	-	-	0	-	-	-	-	-	-	-	-	-583509
Aug. 19, 2021	-	62223	-	-	1008	-	-	-	-	-	-	-	-	-61215
Aug. 20, 2021	-	539812	-	-	0	-	-	-	-	-	-	-	-	-539812
Aug. 21, 2021	-	34471	-	-	42	-	-	-	-	-	-	-	-	-34429
Aug. 22, 2021	-	4743	-	-	8	-	-	-	-	-	-	-	-	-4735
Aug. 23, 2021	-	558567	-	-	0	-	-	-	85	-	-	-	-	-558482
Aug. 24, 2021	-	576890	-	-	0	-	-	-	-	-	-	-	-	-576890
Aug. 25, 2021	-	572484	-	-	0	-	-	-	-	-	-	-	-	-572484
Aug. 26, 2021	-	596424	-	-	40	-	-	-	-	-	-	-	-	-596384
Aug. 27, 2021	-	547098	-	300027	2	-	-	-	25000	-	-	-	7185	-829308
Aug. 28, 2021	-	12438	-	-	4	-	-	-	-	-	-	-	-	-12434
Aug. 29, 2021	-	3406	-	-	46	-	-	-	-	-	-	-	-	-3360
Aug. 30, 2021	-	558539	-	-	0	5000	-	-	-	-	-	50	-	-553489
Aug. 31, 2021	-	638443	-	-	325	-	-	-	-	-	-	-	-	-638118

**Notes:** #Includes Targeted Long Term Repo Operations (TLTRO), Targeted Long Term Repo Operations 2.0 (TLTRO 2.0) and On Tap Targeted Long Term Repo Operations. Negative (-) sign indicates repayments done by Banks.

&amp; Negative (-) sign indicates repayments done by Banks.

£ As per Press Release No. 2021-2022/177 dated May 07, 2021. From June 18, 2021, the data also includes the amount absorbed as per the Press Release No. 2021-2022/323 dated June 04, 2021.

#### **No. 4: Sale/ Purchase of U.S. Dollar by the RBI**

i) Operations in onshore / offshore OTC segment

## ii) Operations in currency futures segment

Item	2020-21	2020		2021	
		Aug.	Jul.	Aug.	
		1	2	3	4
1 Net Purchase/ Sale of Foreign Currency (US \$ Million) (1.1-1.2)		0	0	0	0
1.1 Purchase (+)		12118	0	0	560
1.2 Sale (-)		12118	0	0	560
2 Outstanding Net Currency Futures Sales (-)/ Purchase (+) at the end of month (US \$ Million)		690	0	0	0

**No. 4 A : Maturity Breakdown (by Residual Maturity) of Outstanding  
Forwards of RBI (US \$ Million)**

Item	As on August 31, 2021		
	Long (+)	Short (-)	Net (1-2)
	1	2	3
1. Upto 1 month	8378	970	7408
2. More than 1 month and upto 3 months	15744	3260	12484
3. More than 3 months and upto 1 year	40934	11220	29714
4. More than 1 year	0	0	0
<b>Total (1+2+3+4)</b>	<b>65056</b>	<b>15450</b>	<b>49606</b>

**No. 5: RBI's Standing Facilities**

(₹ Crore)

Item	As on the Last Reporting Friday							
	2020-21		2020		2021			
	Sep. 25	Apr. 23	May 21	Jun. 18	Jul. 30	Aug. 27	Sep. 24	
	1	2	3	4	5	6	7	8
1 MSF	182	50	149	494	59	254	2	152
2 Export Credit Refinance for Scheduled Banks								
2.1 Limit	-	-	-	-	-	-	-	-
2.2 Outstanding	-	-	-	-	-	-	-	-
3 Liquidity Facility for PDs								
3.1 Limit	4900	4900	4900	4900	4900	4900	4900	4900
3.2 Outstanding	-	0	0	0	0	0	0	0
4 Others								
4.1 Limit	75000	65000	75000	60000	76000	76000	76000	76000
4.2 Outstanding	32387	37691	27122	1662	5578	23296	23296	25396
5 Total Outstanding (1+2.2+3.2+4.2)	32569	37741	27271	2156	5637	23550	23298	25548

Note :1.Special refinance facility to Others, i.e. to the EXIM Bank, is reopened since May 22, 2020

2.Refinance facility to Others, i.e. to the NABARD/SIDBI/NHB U/S 17(4H) of RBI ACT,1934, since, April 17, 2020.

# Money and Banking

## No. 6: Money Stock Measures

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays					(₹ Crore)
	2020-21	2020	2021			
		Aug. 28	Jul. 30	Aug. 13	Aug. 27	
	1	2	3	4	5	
1 Currency with the Public (1.1 + 1.2 + 1.3 – 1.4)	2751828	2583111	2839224	2854457	2830891	
1.1 Notes in Circulation	2826851	2654096	2919525	2933072	2916737	
1.2 Circulation of Rupee Coin	26170	25708	26381	26381	26467	
1.3 Circulation of Small Coins	743	743	743	743	743	
1.4 Cash on Hand with Banks	101935	97436	107425	105739	113055	
2 Deposit Money of the Public	2042471	1699170	2017281	1978153	1972358	
2.1 Demand Deposits with Banks	1995120	1659207	1971184	1932254	1926202	
2.2 ‘Other’ Deposits with Reserve Bank	47351	39964	46097	45899	46156	
<b>3 M<sub>1</sub> (1 + 2)</b>	<b>4794299</b>	<b>4282281</b>	<b>4856505</b>	<b>4832610</b>	<b>4803249</b>	
4 Post Office Saving Bank Deposits	170025	160469	170025	170025	170025	
<b>5 M<sub>2</sub> (3 + 4)</b>	<b>4964324</b>	<b>4442750</b>	<b>5026530</b>	<b>5002635</b>	<b>4973274</b>	
6 Time Deposits with Banks	14050278	13365691	14516102	14574524	14525995	
<b>7 M<sub>3</sub> (3 + 6)</b>	<b>18844578</b>	<b>17647972</b>	<b>19372607</b>	<b>19407134</b>	<b>19329245</b>	
8 Total Post Office Deposits	509544	463554	509544	509544	509544	
<b>9 M<sub>4</sub> (7 + 8)</b>	<b>19354122</b>	<b>18111526</b>	<b>19882151</b>	<b>19916678</b>	<b>19838789</b>	

**No. 7: Sources of Money Stock (M<sub>3</sub>)**

(₹ Crore)

Sources	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2020-21	2020	2021		
		Aug. 28	Jul. 30	Aug. 13	Aug. 27
	1	2	3	4	5
<b>1 Net Bank Credit to Government</b>	<b>5850374</b>	<b>5613739</b>	<b>6054656</b>	<b>6095309</b>	<b>6078277</b>
1.1 RBI's net credit to Government (1.1.1–1.1.2)	1099686	1015146	1116973	1188427	1191232
1.1.1 Claims on Government	1337300	1194026	1517584	1554871	1578932
1.1.1.1 Central Government	1333917	1184993	1516748	1544696	1575852
1.1.1.2 State Governments	3383	9033	836	10175	3080
1.1.2 Government deposits with RBI	237615	178880	400612	366444	387700
1.1.2.1 Central Government	237572	178838	400569	366402	387658
1.1.2.2 State Governments	42	42	42	42	42
1.2 Other Banks' Credit to Government	4750689	4598593	4937683	4906882	4887045
<b>2 Bank Credit to Commercial Sector</b>	<b>11668466</b>	<b>10876237</b>	<b>11624768</b>	<b>11601495</b>	<b>11609619</b>
2.1 RBI's credit to commercial sector	8709	11565	8573	8698	8616
2.2 Other banks' credit to commercial sector	11659757	10864672	11616195	11592797	11601003
2.2.1 Bank credit by commercial banks	10949509	10216158	10910567	10888834	10897601
2.2.2 Bank credit by co-operative banks	694758	638172	687653	685934	685563
2.2.3 Investments by commercial and co-operative banks in other securities	15490	10342	17975	18029	17839
<b>3 Net Foreign Exchange Assets of Banking Sector (3.1 + 3.2)</b>	<b>4578846</b>	<b>4202376</b>	<b>4938902</b>	<b>4921251</b>	<b>4857809</b>
3.1 RBI's net foreign exchange assets (3.1.1–3.1.2)	4199400	3957722	4595551	4577901	4514459
3.1.1 Gross foreign assets	4199637	3957965	4595795	4578145	4514703
3.1.2 Foreign liabilities	237	243	244	244	244
3.2 Other banks' net foreign exchange assets	379446	244655	343350	343350	343350
<b>4 Government's Currency Liabilities to the Public</b>	<b>26913</b>	<b>26451</b>	<b>27124</b>	<b>27124</b>	<b>27210</b>
<b>5 Banking Sector's Net Non-monetary Liabilities</b>	<b>3280021</b>	<b>3070832</b>	<b>3272843</b>	<b>3238046</b>	<b>3243670</b>
5.1 Net non-monetary liabilities of RBI	1356660	1421949	1382828	1349051	1316710
5.2 Net non-monetary liabilities of other banks (residual)	1923362	1648883	1890015	1888995	1926960
<b>M<sub>3</sub> (1+2+3+4–5)</b>	<b>18844578</b>	<b>17647972</b>	<b>19372607</b>	<b>19407134</b>	<b>19329245</b>

**No. 8: Monetary Survey**

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2020-21	2020	2021		
		Aug. 28	Jul. 30	Aug. 13	Aug. 27
	1	2	3	4	5
<b>Monetary Aggregates</b>					
NM <sub>1</sub> (1.1 + 1.2.1+1.3)	4794299	4282281	4856505	4832610	4803249
NM <sub>2</sub> (NM <sub>1</sub> + 1.2.2.1)	11048277	10221303	11320716	11323374	11273752
NM <sub>3</sub> (NM <sub>2</sub> + 1.2.2.2 + 1.4 = 2.1 + 2.2 + 2.3 – 2.4 – 2.5)	18936051	17752776	19464472	19496219	19420224
<b>1 Components</b>					
1.1 Currency with the Public	2751828	2583111	2839224	2854457	2830891
1.2 Aggregate Deposits of Residents	15892848	14857033	16336099	16356173	16305096
1.2.1 Demand Deposits	1995121	1659207	1971184	1932254	1926202
1.2.2 Time Deposits of Residents	13897727	13197826	14364915	14423920	14378894
1.2.2.1 Short-term Time Deposits	6253977	5939022	6464212	6490764	6470502
1.2.2.1.1 Certificates of Deposit (CDs)	78702	88084	64620	63884	64693
1.2.2.2 Long-term Time Deposits	7643750	7258804	7900703	7933156	7908392
1.3 ‘Other’ Deposits with RBI	47351	39964	46097	45899	46156
1.4 Call/Term Funding from Financial Institutions	244025	272668	243052	239690	238081
<b>2 Sources</b>					
2.1 Domestic Credit	18518950	17466434	18659152	18705175	18689851
2.1.1 Net Bank Credit to the Government	5850374	5613739	6054657	6095309	6078277
2.1.1.1 Net RBI credit to the Government	1099686	1015146	1116974	1188427	1191232
2.1.1.2 Credit to the Government by the Banking System	4750689	4598593	4937683	4906882	4887045
2.1.2 Bank Credit to the Commercial Sector	12668575	11852695	12604495	12609866	12611575
2.1.2.1 RBI Credit to the Commercial Sector	34134	36368	25304	25470	25388
2.1.2.2 Credit to the Commercial Sector by the Banking System	12634441	11816327	12579191	12584396	12586187
2.1.2.2.1 Other Investments (Non-SLR Securities)	951313	940213	954632	982987	976083
2.2 Government’s Currency Liabilities to the Public	26913	26451	27124	27124	27210
2.3 Net Foreign Exchange Assets of the Banking Sector	4438202	4067798	4818830	4820058	4772540
2.3.1 Net Foreign Exchange Assets of the RBI	4199400	3957722	4595551	4577901	4514459
2.3.2 Net Foreign Currency Assets of the Banking System	238802	110076	223279	242157	258081
2.4 Capital Account	2775245	2828647	3025199	2993084	2962739
2.5 Other items (net)	1272767	979260	1015435	1063053	1106638

**No. 9: Liquidity Aggregates**

(₹ Crore)

Aggregates	2020-21	2020		2021	
		Aug.	Jun.	Jul.	Aug.
	1	2	3	4	5
<b>1 NM<sub>3</sub></b>	<b>18936051</b>	<b>17752776</b>	<b>19263589</b>	<b>19464472</b>	<b>19420224</b>
2 Postal Deposits	509544	463554	509544	509544	509544
<b>3 L<sub>1</sub> (1 + 2)</b>	<b>19445595</b>	<b>18216330</b>	<b>19773133</b>	<b>19974016</b>	<b>19929768</b>
4 Liabilities of Financial Institutions	33179	40802	30104	29300	30392
4.1 Term Money Borrowings	2645	7940	3563	3563	3563
4.2 Certificates of Deposit	25550	29300	21525	20525	21925
4.3 Term Deposits	4984	3561	5016	5212	4905
<b>5 L<sub>2</sub> (3 + 4)</b>	<b>19478774</b>	<b>18257131</b>	<b>19803237</b>	<b>20003316</b>	<b>19960160</b>
6 Public Deposits with Non-Banking Financial Companies	31905	..	31905	..	..
<b>7 L<sub>3</sub> (5 + 6)</b>	<b>19510679</b>	<b>..</b>	<b>19835142</b>	<b>..</b>	<b>..</b>

**Note :** 1. Figures in the columns might not add up to the total due to rounding off of numbers.

**No. 10: Reserve Bank of India Survey**

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2020-21	2020	2021		
		Aug. 28	Jul. 30	Aug. 13	Aug. 27
	1	2	3	4	5
<b>1 Components</b>					
1.1 Currency in Circulation	2853763	2680547	2946649	2960196	2943946
1.2 Bankers' Deposits with the RBI	698867	472795	723212	721253	689090
1.2.1 Scheduled Commercial Banks	651748	439411	674997	672481	641437
1.3 'Other' Deposits with the RBI	47351	39964	46097	45899	46156
Reserve Money (1.1 + 1.2 + 1.3 = 2.1 + 2.2 + 2.3 - 2.4 - 2.5)	3599981	3193305	3715958	3727348	3679192
<b>2 Sources</b>					
2.1 RBI's Domestic Credit	730328	631082	476111	471374	454233
2.1.1 Net RBI credit to the Government	1099686	1015146	1116974	1188427	1191232
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)	1096345	1006155	1116180	1178294	1188194
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	1333174	1184242	1515963	1543943	1575132
2.1.1.1.3.1 Central Government Securities	1333174	1184242	1515963	1543943	1575132
2.1.1.1.4 Rupee Coins	743	751	786	753	720
2.1.1.1.5 Deposits of the Central Government	237572	178838	400569	366402	387658
2.1.1.2 Net RBI credit to State Governments	3340	8991	794	10133	3038
2.1.2 RBI's Claims on Banks	-403492	-420432	-666167	-742523	-762387
2.1.2.1 Loans and Advances to Scheduled Commercial Banks	-378066	-395629	-649436	-725751	-745615
2.1.3 RBI's Credit to Commercial Sector	34134	36368	25304	25470	25388
2.1.3.1 Loans and Advances to Primary Dealers	1	-	1	1	1
2.1.3.2 Loans and Advances to NABARD	25426	24803	16731	16772	16772
2.2 Government's Currency Liabilities to the Public	26913	26451	27124	27124	27210
2.3 Net Foreign Exchange Assets of the RBI	4199400	3957722	4595551	4577901	4514459
2.3.1 Gold	247723	273025	280086	269831	275932
2.3.2 Foreign Currency Assets	3951694	3684714	4315482	4308087	4238544
2.4 Capital Account	1173033	1254854	1282350	1248133	1212280
2.5 Other Items (net)	183626	167095	100478	100918	104429

**No. 11: Reserve Money - Components and Sources**

(₹ Crore)

Item	2020-21	Outstanding as on March 31/ last Fridays of the month/ Fridays					
		2020	2021				
			Aug. 28	Jul. 30	Aug. 6	Aug. 13	Aug. 20
		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)	3599981	3193305	3715957	3717503	3727348	3724660	3679192
<b>1 Components</b>							
1.1 Currency in Circulation	2853763	2680547	2946649	2953982	2960196	2953786	2943946
1.2 Bankers' Deposits with RBI	698867	472795	723212	717317	721253	724149	689090
1.3 'Other' Deposits with RBI	47351	39964	46097	46204	45899	46724	46156
<b>2 Sources</b>							
2.1 Net Reserve Bank Credit to Government	1099686	1015146	1116973	1153979	1188427	1158540	1191232
2.2 Reserve Bank Credit to Banks	-378066	-395629	-649436	-699292	-725751	-686092	-745615
2.3 Reserve Bank Credit to Commercial Sector	8709	11565	8573	8576	8698	8692	8616
2.4 Net Foreign Exchange Assets of RBI	4199400	3957722	4595551	4588631	4577901	4565214	4514459
2.5 Government's Currency Liabilities to the Public	26913	26451	27124	27124	27124	27124	27210
2.6 Net Non- Monetary Liabilities of RBI	1356660	1421949	1382828	1361515	1349051	1348818	1316710

**No. 12: Commercial Bank Survey**

(₹ Crore)

Item	Outstanding as on last reporting Fridays of the month/ reporting Fridays of the month				
	2020-21	2020	2021		
		Aug. 28	Jul. 30	Aug. 13	Aug. 27
	1	2	3	4	5
<b>1 Components</b>					
1.1 Aggregate Deposits of Residents	14960961	14008929	15397908	15421695	15369949
1.1.1 Demand Deposits	1861193	1537714	1834965	1796748	1790996
1.1.2 Time Deposits of Residents	13099768	12471215	13562943	13624947	13578953
1.1.2.1 Short-term Time Deposits	5894896	5612047	6103324	6131226	6110529
1.1.2.1.1 Certificates of Deposits (CDs)	78702	88084	64620	63884	64693
1.1.2.2 Long-term Time Deposits	7204873	6859168	7459619	7493721	7468424
1.2 Call/Term Funding from Financial Institutions	244025	272668	243052	239690	238081
<b>2 Sources</b>					
2.1 Domestic Credit	16378019	15520336	16509051	16485341	16467365
2.1.1 Credit to the Government	4461632	4359336	4642819	4612061	4591955
2.1.2 Credit to the Commercial Sector	11916387	11161000	11866233	11873280	11875410
2.1.2.1 Bank Credit	10949509	10216158	10910567	1088834	10897601
2.1.2.1.1 Non-food Credit	10888255	10150217	10833089	10816822	10828801
2.1.2.2 Net Credit to Primary Dealers	23633	11706	8628	8875	9363
2.1.2.3 Investments in Other Approved Securities	894	1886	1369	1546	1324
2.1.2.4 Other Investments (in non-SLR Securities)	942351	931250	945669	974024	967121
2.2 Net Foreign Currency Assets of Commercial Banks (2.2.1–2.2.2–2.2.3)	238802	110076	223279	242157	258081
2.2.1 Foreign Currency Assets	454866	364293	429636	448543	459653
2.2.2 Non-resident Foreign Currency Repatriable Fixed Deposits	152552	167864	151187	150604	147101
2.2.3 Overseas Foreign Currency Borrowings	63512	86353	55170	55782	54471
2.3 Net Bank Reserves (2.3.1+2.3.2–2.3.3)	1010202	922291	1420586	1492791	1488773
2.3.1 Balances with the RBI	542693	439411	674997	672481	641437
2.3.2 Cash in Hand	90748	87251	96153	94559	101721
2.3.3 Loans and Advances from the RBI	-376761	-395629	-649436	-725751	-745615
2.4 Capital Account	1578041	1549623	1718679	1720781	1726288
2.5 Other items (net) (2.1+2.2+2.3–2.4–1.1–1.2)	843995	721484	793277	838123	879902
2.5.1 Other Demand and Time Liabilities (net of 2.2.3)	593095	481024	518434	508682	501728
2.5.2 Net Inter-Bank Liabilities (other than to PDs)	80681	74846	50080	42157	47623

**No. 13: Scheduled Commercial Banks' Investments**

(₹ Crore)

Item	As on March 26, 2021	2020		2021		
		Aug. 28	Jul. 30	Aug. 13	Aug. 27	
				1	2	3
1 SLR Securities	4462526	4361222	4644188	4613607	4593279	
2 Commercial Paper	82584	85249	80502	84094	81561	
3 Shares issued by						
3.1 PSUs	9840	11746	10674	10636	10665	
3.2 Private Corporate Sector	64035	72540	70398	70050	69704	
3.3 Others	5210	5032	5162	5168	5151	
4 Bonds/Debentures issued by						
4.1 PSUs	121008	124406	113832	115934	115114	
4.2 Private Corporate Sector	308904	306420	315601	316372	313730	
4.3 Others	149325	150313	149065	145880	145057	
5 Instruments issued by						
5.1 Mutual funds	31142	44412	47220	51010	51812	
5.2 Financial institutions	167130	131117	153215	152404	152098	

**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				
	2020-21	2020	2021	2020-21	2020	2021		
		Aug.	Jul.		Aug.	Jul.		
	1	2	3	4	5	6	7	8
Number of Reporting Banks	209	209	210	210	133	133	134	134
<b>1 Liabilities to the Banking System</b>	<b>259530</b>	<b>287863</b>	<b>244295</b>	<b>238674</b>	<b>254589</b>	<b>282629</b>	<b>239820</b>	<b>234251</b>
1.1 Demand and Time Deposits from Banks	200585	222515	184989	170669	195866	217476	180794	166520
1.2 Borrowings from Banks	40886	49330	40938	49402	40880	49330	40920	49396
1.3 Other Demand and Time Liabilities	18059	16018	18369	18602	17843	15824	18106	18336
<b>2 Liabilities to Others</b>	<b>16457782</b>	<b>15447179</b>	<b>16802388</b>	<b>16747142</b>	<b>16014145</b>	<b>15016838</b>	<b>16365752</b>	<b>16311330</b>
2.1 Aggregate Deposits	15540152	14589173	15968858	15936171	15113512	14176793	15549096	15517050
2.1.1 Demand	1899343	1573485	1875111	1830462	1861193	1537714	1834965	1790996
2.1.2 Time	13640809	13015688	14093747	14105709	13252320	12639079	13714131	13726054
2.2 Borrowings	248271	277321	248716	243376	244025	272668	243052	238081
2.3 Other Demand and Time Liabilities	669359	580685	584814	567595	656607	567377	573604	556199
<b>3 Borrowings from Reserve Bank</b>	<b>90275</b>	<b>253645</b>	<b>91796</b>	<b>91841</b>	<b>90275</b>	<b>253645</b>	<b>91796</b>	<b>91806</b>
3.1 Against Usance Bills /Promissory Notes	—	—	—	—	—	—	—	—
3.2 Others	90275	253645	91796	91841	90275	253645	91796	91806
<b>4 Cash in Hand and Balances with Reserve Bank</b>	<b>650745</b>	<b>541243</b>	<b>790639</b>	<b>761625</b>	<b>633440</b>	<b>526662</b>	<b>771150</b>	<b>743158</b>
4.1 Cash in Hand	92793	89431	98123	103757	90748	87251	96153	101721
4.2 Balances with Reserve Bank	557951	451812	692516	657868	542693	439411	674997	641437
<b>5 Assets with the Banking System</b>	<b>265729</b>	<b>279701</b>	<b>251433</b>	<b>249521</b>	<b>197541</b>	<b>219489</b>	<b>198368</b>	<b>195991</b>
5.1 Balances with Other Banks	179430	180377	177673	176091	143294	148257	142739	141467
5.1.1 In Current Account	16796	14740	21223	25855	14226	12609	18316	23335
5.1.2 In Other Accounts	162634	165636	156450	150236	129068	135648	124423	118131
5.2 Money at Call and Short Notice	36716	34222	22888	22006	10654	12448	7856	6146
5.3 Advances to Banks	19908	25023	23898	24127	16764	24494	23030	23695
5.4 Other Assets	29675	40080	26974	27296	26829	34290	24743	24683
<b>6 Investment</b>	<b>4598924</b>	<b>4488286</b>	<b>4784348</b>	<b>4734048</b>	<b>4462526</b>	<b>4361222</b>	<b>4644188</b>	<b>4593279</b>
6.1 Government Securities	4591896	4479884	4776959	4726700	4461632	4359336	4642819	4591955
6.2 Other Approved Securities	7029	8401	7389	7348	894	1886	1369	1324
<b>7 Bank Credit</b>	<b>11297014</b>	<b>10546725</b>	<b>11247903</b>	<b>11236362</b>	<b>10949509</b>	<b>10216158</b>	<b>10910567</b>	<b>10897601</b>
7a Food Credit	91653	96346	113296	104619	61254	65941	77478	68801
7.1 Loans, Cash-credits and Overdrafts	11081668	10379425	11040563	11032366	10736491	10050841	10705239	10695671
7.2 Inland Bills-Purchased	30896	19412	30468	32026	30531	19148	30452	32005
7.3 Inland Bills-Discounted	128831	104517	124749	122813	127883	103201	123424	121455
7.4 Foreign Bills-Purchased	20762	16559	19261	19266	20394	16317	19080	19088
7.5 Foreign Bills-Discounted	34857	26813	32862	29890	34210	26651	32371	29383

**No. 15: Deployment of Gross Bank Credit by Major Sectors**

(₹ Crore)

Sector	Outstanding as on				Growth (%)	
	Mar.26, 2021	2020	2021		Financial year so far	Y-o-Y
			Aug.28	Jul.30	Aug.27	2021-22
	1	2	3	4	%	%
I. Gross Bank Credit (II+III)	<b>10949509</b>	<b>10216158</b>	<b>10910416</b>	<b>10897463</b>	<b>-0.5</b>	<b>6.7</b>
II. Food Credit	<b>61254</b>	<b>65941</b>	<b>77478</b>	<b>68801</b>	<b>12.3</b>	<b>4.3</b>
III. Non-food Credit	<b>10888255</b>	<b>10150217</b>	<b>10832938</b>	<b>10828662</b>	<b>-0.5</b>	<b>6.7</b>
1. Agriculture & Allied Activities	<b>1271047</b>	<b>1171679</b>	<b>1318024</b>	<b>1304270</b>	<b>2.6</b>	<b>11.3</b>
2. Industry (Micro and Small, Medium and Large )	<b>2895786</b>	<b>2757526</b>	<b>2824855</b>	<b>2819601</b>	<b>-2.6</b>	<b>2.3</b>
2.1 Micro and Small <sup>1</sup>	383854	354380	386092	390108	1.6	10.1
2.2 Medium	136054	104148	163401	170177	25.1	63.4
2.3 Large	2375878	2298998	2275362	2259315	-4.9	-1.7
3. Services	<b>2647362</b>	<b>2536619</b>	<b>2597736</b>	<b>2625323</b>	<b>-0.8</b>	<b>3.5</b>
3.1 Transport Operators	133953	127391	132405	131845	-1.6	3.5
3.2 Computer Software	19183	17818	19192	18541	-3.3	4.1
3.3 Tourism, Hotels & Restaurants	48019	45613	48398	48563	1.1	6.5
3.4 Shipping	7188	4957	7142	6997	-2.7	41.1
3.5 Aviation	25643	25807	30351	28278	10.3	9.6
3.6 Professional Services	105253	106814	97174	99935	-5.1	-6.4
3.7 Trade	590377	552665	594351	591683	0.2	7.1
3.7.1 Wholesale Trade	309611	273523	313305	309807	0.1	13.3
3.7.2 Retail Trade	280766	279142	281046	281876	0.4	1.0
3.8 Commercial Real Estate	264246	260797	262655	258286	-2.3	-1.0
3.9 Non-Banking Financial Companies (NBFCs) <sup>2</sup> of which,	937949	893062	892226	870541	-7.2	-2.5
3.9.1 Housing Finance Companies (HFCs)	215189	186983	169722	205093	-4.7	9.7
3.9.2 Public Financial Institutions (PFIs)	78442	38887	78398	77833	-0.8	100.2
3.10 Other Services <sup>3</sup>	515550	501695	513843	570654	10.7	13.7
4. Personal Loans	<b>2845527</b>	<b>2580501</b>	<b>2858741</b>	<b>2893913</b>	<b>1.7</b>	<b>12.1</b>
4.1 Consumer Durables	8810	7931	9526	10258	16.4	29.4
4.2 Housing	1458358	1345571	1466762	1469744	0.8	9.2
4.3 Advances against Fixed Deposits	62975	55096	59191	61088	-3.0	10.9
4.4 Advances to Individuals against share & bonds	4419	5985	4453	4390	-0.7	-26.6
4.5 Credit Card Outstanding	116537	104833	111323	115612	-0.8	10.3
4.6 Education	63968	65033	62531	62964	-1.6	-3.2
4.7 Vehicle Loans	267352	248210	265951	268643	0.5	8.2
4.8 Loan against gold jewellery	60724	37860	62412	62926	3.6	66.2
4.9 Other Personal Loans	802385	709983	816592	838288	4.5	18.1
5. Priority Sector (Memo)						
5.1 Agriculture & Allied Activities <sup>4</sup>	1235082	1154920	1260065	1249775	1.2	8.2
5.2 Micro & Small Enterprises <sup>5</sup>	1113243	1098330	1099061	1110565	-0.2	1.1
5.3 Medium Enterprises <sup>6</sup>	207615	139525	209743	215688	3.9	54.6
5.4 Housing	468659	473048	471896	470652	0.4	-0.5
5.5 Education Loans	48201	52013	46754	46993	-2.5	-9.7
5.6 Renewable Energy	1171	1017	1230	1313	12.1	29.1
5.7 Social Infrastructure	2352	980	2438	2619	11.4	167.3
5.8 Export Credit <sup>7</sup>	19028	14464	21765	17875	-6.1	23.6
5.9 Others	9169	9166	29024	15988	74.4	74.4
5.10 Weaker Sections including net PSLC- SF/MF	813263	722250	775238	814998	0.2	12.8

Note 1: Data are provisional. Gross bank 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 90 per cent of total non-food credit extended by all SCBs.

Note 2: With effect from January 2021, sectoral credit data are based on revised format due to which values and growth rates of some of the existing components published earlier have undergone some changes

<sup>1</sup> Micro & Small includes credit to micro & small industries in the manufacturing sector.

<sup>2</sup> NBFCs include HFCs, PFIs, Microfinance Institutions (MFIs), NBFCs engaged in gold loan and others.

<sup>3</sup> Other Services include Mutual Fund (MFs), Banking and Finance other than NBFCs and MFs and other services which are not indicated elsewhere under services.

<sup>4</sup> Agriculture and Allied Activities also include priority sector lending certificates (PSLCs).

<sup>5</sup> Micro and Small Enterprises include credit to micro and small enterprises in manufacturing and services sector and also include PSLCs.

<sup>6</sup> Medium Enterprises include credit to medium enterprises in the manufacturing and services sector.

<sup>7</sup> Export credit under the priority sector relates to foreign banks only.

**No. 16: Industry-wise Deployment of Gross Bank Credit**

(₹ Crore)

Industry	Outstanding as on				Growth (%)	
	Mar. 26, 2021	2020		2021		Financial year so far
		Aug. 28	Jul.30	Aug. 27	2021-22	Y-o-Y
	1	2	3	4	%	%
<b>2 Industries (2.1 to 2.19)</b>	2895786	2757526	2824855	2819601	-2.6	2.3
2.1 Mining & Quarrying (incl. Coal)	46052	41294	46885	49913	8.4	20.9
2.2 Food Processing	153286	144382	151626	146314	-4.5	1.3
2.2.1 Sugar	25519	21311	21248	19520	-23.5	-8.4
2.2.2 Edible Oils & Vanaspati	18972	16898	17490	18355	-3.2	8.6
2.2.3 Tea	4273	4160	4493	4684	9.6	12.6
2.2.4 Others	104523	102012	108395	103755	-0.7	1.7
2.3 Beverage & Tobacco	15966	14547	15036	14564	-8.8	0.1
2.4 Textiles	200487	187651	201145	199804	-0.3	6.5
2.4.1 Cotton Textiles	90546	84640	85916	85196	-5.9	0.7
2.4.2 Jute Textiles	2724	2059	2735	2674	-1.8	29.9
2.4.3 Man-Made Textiles	38861	34288	41512	41695	7.3	21.6
2.4.4 Other Textiles	68356	66665	70982	70239	2.8	5.4
2.5 Leather & Leather Products	10461	10894	10534	10421	-0.4	-4.3
2.6 Wood & Wood Products	13186	12691	13451	13507	2.4	6.4
2.7 Paper & Paper Products	35466	32692	36129	36086	1.7	10.4
2.8 Petroleum, Coal Products & Nuclear Fuels	66909	53569	69299	63026	-5.8	17.7
2.9 Chemicals & Chemical Products	192323	174863	182266	178794	-7.0	2.2
2.9.1 Fertiliser	32237	35393	26330	24939	-22.6	-29.5
2.9.2 Drugs & Pharmaceuticals	51723	48758	50310	49354	-4.6	1.2
2.9.3 Petro Chemicals	45621	36024	41804	40384	-11.5	12.1
2.9.4 Others	62742	54687	63822	64118	2.2	17.2
2.10 Rubber, Plastic & their Products	54308	49534	57630	58457	7.6	18.0
2.11 Glass & Glassware	6319	6534	6103	5922	-6.3	-9.4
2.12 Cement & Cement Products	54194	59279	47213	47505	-12.3	-19.9
2.13 Basic Metal & Metal Product	328867	344144	293065	293635	-10.7	-14.7
2.13.1 Iron & Steel	232934	256925	201179	201972	-13.3	-21.4
2.13.2 Other Metal & Metal Product	95933	87219	91886	91663	-4.5	5.1
2.14 All Engineering	147545	139552	144818	146872	-0.5	5.2
2.14.1 Electronics	33871	28733	33349	34199	1.0	19.0
2.14.2 Others	113674	110819	111469	112673	-0.9	1.7
2.15 Vehicles, Vehicle Parts & Transport Equipment	83188	88900	87141	85423	2.7	-3.9
2.16 Gems & Jewellery	62983	54570	61404	61685	-2.1	13.0
2.17 Construction	94565	102538	97834	97967	3.6	-4.5
2.18 Infrastructure	1092217	1024836	1081228	1085039	-0.7	5.9
2.18.1 Power	567584	550045	568103	567273	-0.1	3.1
2.18.2 Telecommunications	112120	125101	114138	110396	-1.5	-11.8
2.18.3 Roads	237061	185613	237505	240065	1.3	29.3
2.18.4 Airports	7327	4876	7416	7479	2.1	53.4
2.18.5 Ports	7363	9228	8851	8840	20.1	-4.2
2.18.6 Railways	11260	12166	12909	12917	14.7	6.2
2.18.7 Other Infrastructure	149502	137807	132305	138069	-7.6	0.2
2.19 Other Industries	237464	215056	222047	224668	-5.4	4.5

**Note :** With effect from January 2021, sectoral credit data are based on revised format due to which values and growth rates of some of the existing components published earlier have undergone some changes.

**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								
	2020-21	2020		2021					
		Jul, 31	May, 28	Jun, 04	Jun, 18	Jun, 25	Jul, 02	Jul, 16	Jul, 30
		1	2	3	4	5	6	7	8
Number of Reporting Banks		32	32	33	32	33	33	32	33
<b>1 Aggregate Deposits (2.1.1.2+2.2.1.2)</b>	<b>125859.6</b>	<b>126747.2</b>	<b>124193.8</b>	<b>123544.9</b>	<b>125115.5</b>	<b>126578.8</b>	<b>126046.9</b>	<b>127039.8</b>	<b>125916.2</b>
2 Demand and Time Liabilities									
<b>2.1 Demand Liabilities</b>	<b>23736.9</b>	<b>24765.7</b>	<b>27145.3</b>	<b>27187.5</b>	<b>26632.6</b>	<b>26326.8</b>	<b>26968.5</b>	<b>27279.7</b>	<b>27260.6</b>
2.1.1 Deposits									
2.1.1.1 Inter-Bank	4896.9	4000.0	5137.8	5379.3	5372.9	4843.0	5053.9	5397.3	5180.7
2.1.1.2 Others	13,899.4	14123.7	15774.7	15744.1	15924.5	16531.2	15749.2	16525.2	15832.0
2.1.2 Borrowings from Banks	0.0	268.7	829.8	817.1	819.8	819.8	819.8	849.8	1019.7
2.1.3 Other Demand Liabilities	4940.6	6373.3	5403.1	5247.0	4515.4	4132.8	5345.6	4507.4	5228.2
<b>2.2 Time Liabilities</b>	<b>179957.5</b>	<b>174213.9</b>	<b>169907.2</b>	<b>168146.9</b>	<b>169212.2</b>	<b>169926.4</b>	<b>167337.6</b>	<b>169250.6</b>	<b>166255.1</b>
2.2.1 Deposits									
2.2.1.1 Inter-Bank	65333.7	59247.7	59567.6	58427.5	56839.2	56574.5	55274.4	56414.7	54487.6
2.2.1.2 Others	111960.2	112623.5	108419.1	107800.9	109191.0	110047.6	110297.7	110514.6	110084.2
2.2.2 Borrowings from Banks	630.0	629.9	1118.9	1118.9	1308.9	909.2	908.0	908.0	908.0
2.2.3 Other Time Liabilities	2033.7	1712.8	801.6	799.6	1873.2	2395.1	857.6	1413.3	775.3
3 Borrowing from Reserve Bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Borrowings from a notified bank / Government	63559.8	57477.7	49932.4	50787.4	52431.3	53948.1	53897.7	55245.5	54718.0
4.1 Demand	15691.8	14236.6	11059.3	9937.2	9969.4	10771.0	10601.1	10615.3	10682.3
4.2 Time	47868.0	43241.1	38873.1	40850.2	42461.9	43177.2	43296.6	44630.2	44035.8
<b>5 Cash in Hand and Balances with Reserve Bank</b>	<b>8151.1</b>	<b>7125.5</b>	<b>9274.1</b>	<b>9268.3</b>	<b>9237.2</b>	<b>8751.1</b>	<b>8844.7</b>	<b>9149.7</b>	<b>9567.7</b>
5.1 Cash in Hand	570.3	565.4	682.3	615.8	696.8	669.6	614.7	693.2	604.1
5.2 Balance with Reserve Bank	7580.8	6560.1	8591.8	8652.5	8540.4	8081.5	8230.0	8456.5	8963.6
<b>6 Balances with Other Banks in Current Account</b>	<b>1148.1</b>	<b>1020.2</b>	<b>1251.8</b>	<b>1312.8</b>	<b>1255.2</b>	<b>1222.8</b>	<b>1338.4</b>	<b>1433.5</b>	<b>1287.8</b>
<b>7 Investments in Government Securities</b>	<b>64455.2</b>	<b>56888.2</b>	<b>67366.8</b>	<b>66889.2</b>	<b>65848.8</b>	<b>67450.1</b>	<b>68206.6</b>	<b>68048.9</b>	<b>67457.7</b>
<b>8 Money at Call and Short Notice</b>	<b>28835.7</b>	<b>25361.7</b>	<b>21768.4</b>	<b>20848.2</b>	<b>20941.3</b>	<b>20792.7</b>	<b>19263.0</b>	<b>21097.6</b>	<b>19409.0</b>
<b>9 Bank Credit (10.1+11)</b>	<b>114631.6</b>	<b>112406.7</b>	<b>108118.7</b>	<b>109288.7</b>	<b>106904.5</b>	<b>106675.1</b>	<b>107893.5</b>	<b>108426.4</b>	<b>109260.6</b>
10 Advances									
10.1 Loans, Cash-Credits and Overdrafts	114612.1	112403.1	108099.8	109276.0	106900.5	106671.0	107889.5	108422.2	109256.5
10.2 Due from Banks	89429.1	80109.4	84144.9	83060.6	85015.9	86149.5	86303.3	87316.9	85942.6
11 Bills Purchased and Discounted	19.5	3.6	18.9	12.7	4.0	4.1	4.1	4.2	4.0

## Prices and Production

### No. 18: Consumer Price Index (Base: 2012=100)

Group/Sub group	2020-21			Rural			Urban			Combined		
	Rural	Urban	Combined	Aug. 20	Jul. 21	Aug 21(P)	Aug. 20	Jul. 21	Aug 21(P)	Aug. 20	Jul. 21	Aug 21(P)
	1	2	3	4	5	6	7	8	9	10	11	12
<b>1 Food and beverages</b>	<b>156.7</b>	<b>161.1</b>	<b>158.3</b>	<b>156.1</b>	<b>161.7</b>	<b>161.9</b>	<b>161.3</b>	<b>167.9</b>	<b>167.6</b>	<b>158.0</b>	<b>164.0</b>	<b>164.0</b>
1.1 Cereals and products	145.4	149.9	146.8	146.9	145.1	145.0	151.5	149.1	149.2	148.4	146.4	146.3
1.2 Meat and fish	185.2	192.4	187.7	183.9	204.5	202.4	193.1	210.9	207.9	187.1	206.8	204.3
1.3 Egg	160.3	164.8	162.0	149.5	180.4	176.7	157.3	185.0	178.6	152.5	182.2	177.4
1.4 Milk and products	154.1	154.4	154.2	153.4	157.1	157.5	153.9	158.2	158.9	153.6	157.5	158.0
1.5 Oils and fats	148.2	139.9	145.2	140.4	188.7	190.8	134.4	170.6	171.8	138.2	182.1	183.8
1.6 Fruits	146.9	153.4	149.9	147.0	157.7	155.8	155.4	170.9	167.0	150.9	163.9	161.0
1.7 Vegetables	174.2	196.2	181.7	178.8	152.8	154.0	202.0	186.4	186.2	186.7	164.2	164.9
1.8 Pulses and products	154.4	156.0	154.9	149.3	163.6	162.8	150.8	164.7	163.5	149.8	164.0	163.0
1.9 Sugar and confectionery	114.4	117.0	115.3	115.1	113.9	115.2	118.9	115.7	116.8	116.4	114.5	115.7
1.10 Spices	161.9	160.4	161.4	160.0	169.7	169.8	160.9	165.5	165.7	160.3	168.3	168.4
1.11 Non-alcoholic beverages	149.8	141.3	146.3	145.4	166.2	167.6	137.7	153.4	154.0	142.2	160.9	161.9
1.12 Prepared meals, snacks, sweets	163.2	165.5	164.3	161.6	171.0	171.9	164.4	173.5	174.1	162.9	172.2	172.9
<b>2 Pan, tobacco and intoxicants</b>	<b>181.8</b>	<b>188.7</b>	<b>183.6</b>	<b>182.9</b>	<b>189.7</b>	<b>190.2</b>	<b>188.7</b>	<b>195.5</b>	<b>196.0</b>	<b>184.4</b>	<b>191.2</b>	<b>191.7</b>
<b>3 Clothing and footwear</b>	<b>155.6</b>	<b>149.7</b>	<b>153.3</b>	<b>154.6</b>	<b>165.3</b>	<b>166.3</b>	<b>148.1</b>	<b>155.5</b>	<b>156.4</b>	<b>152.0</b>	<b>161.4</b>	<b>162.4</b>
3.1 Clothing	156.4	152.0	154.7	155.4	166.0	166.9	150.2	157.9	158.8	153.4	162.8	163.7
3.2 Footwear	151.1	137.2	145.3	149.9	161.1	162.6	136.3	141.9	142.7	144.3	153.1	154.3
<b>4 Housing</b>	--	<b>157.2</b>	<b>157.2</b>	--	--	--	<b>156.3</b>	<b>161.5</b>	<b>162.4</b>	<b>156.3</b>	<b>161.5</b>	<b>162.4</b>
<b>5 Fuel and light</b>	<b>149.1</b>	<b>140.9</b>	<b>146.0</b>	<b>146.4</b>	<b>162.5</b>	<b>163.1</b>	<b>137.2</b>	<b>157.7</b>	<b>158.5</b>	<b>142.9</b>	<b>160.7</b>	<b>161.4</b>
<b>6 Miscellaneous</b>	<b>153.9</b>	<b>146.1</b>	<b>150.2</b>	<b>153.7</b>	<b>162.8</b>	<b>163.3</b>	<b>146.0</b>	<b>155.0</b>	<b>155.7</b>	<b>150.0</b>	<b>159.0</b>	<b>159.6</b>
6.1 Household goods and services	152.9	145.2	149.3	151.6	160.3	160.9	145.4	150.7	152.2	148.7	155.8	156.8
6.2 Health	160.3	151.3	156.9	159.1	170.4	171.1	150.0	161.5	162.2	155.6	167.0	167.7
6.3 Transport and communication	144.9	135.0	139.7	144.6	157.1	157.7	135.1	149.5	150.4	139.6	153.1	153.9
6.4 Recreation and amusement	154.0	144.3	148.5	152.8	160.7	161.1	141.8	151.2	152.2	146.6	155.3	156.1
6.5 Education	162.5	156.2	158.9	161.1	167.2	167.5	154.9	160.3	160.6	157.5	163.2	163.5
6.6 Personal care and effects	153.7	155.8	154.5	157.4	160.4	160.3	159.8	159.6	159.5	158.4	160.1	160.0
<b>General Index (All Groups)</b>	<b>156.1</b>	<b>154.4</b>	<b>155.3</b>	<b>155.4</b>	<b>163.2</b>	<b>163.6</b>	<b>154.0</b>	<b>161.8</b>	<b>162.2</b>	<b>154.7</b>	<b>162.5</b>	<b>162.9</b>

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	2020-21		2020		2021	
			1	2	3	4	5	6
1 Consumer Price Index for Industrial Workers	2016	2.88	-	-	-	122.8	123	
2 Consumer Price Index for Agricultural Labourers	1986-87	5.89	1034	1026	1061	1066		
3 Consumer Price Index for Rural Labourers	1986-87	-	1040	1033	1070	1074		

Source: Labour Bureau, Ministry of Labour and Employment, Government of India.

### No. 20: Monthly Average Price of Gold and Silver in Mumbai

Item	2020-21		2020		2021	
			Aug.		Jul.	
	1	2	3	4	5	6
1 Standard Gold (₹ per 10 grams)	48723		52917		47764	
2 Silver (₹ per kilogram)		59283	67717		68338	64219

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	2020-21	2020		2021		
			Aug.	Jun.	Jul. (P)	Aug. (P)	
	1	2	3	4	5	6	
<b>1 ALL COMMODITIES</b>	<b>100.000</b>	<b>123.4</b>	<b>122.0</b>	<b>133.7</b>	<b>134.5</b>	<b>135.9</b>	
<b>1.1 PRIMARY ARTICLES</b>	<b>22.618</b>	<b>145.7</b>	<b>146.7</b>	<b>153.0</b>	<b>153.4</b>	<b>155.8</b>	
<b>1.1.1 FOOD ARTICLES</b>	<b>15.256</b>	<b>160.7</b>	<b>163.0</b>	<b>160.5</b>	<b>161.3</b>	<b>160.9</b>	
1.1.1.1 Food Grains (Cereals+Pulses)	3.462	159.3	159.7	161.3	159.9	161.0	
1.1.1.2 Fruits & Vegetables	3.475	179.2	187.6	163.5	169.6	168.6	
1.1.1.3 Milk	4.440	153.4	152.3	154.4	154.9	156.8	
1.1.1.4 Eggs, Meat & Fish	2.402	151.2	153.4	165.8	164.0	158.7	
1.1.1.5 Condiments & Spices	0.529	149.5	143.8	151.1	150.9	151.2	
1.1.1.6 Other Food Articles	0.948	162.0	169.9	167.2	165.1	161.9	
<b>1.1.2 NON-FOOD ARTICLES</b>	<b>4.119</b>	<b>130.5</b>	<b>125.5</b>	<b>148.4</b>	<b>152.2</b>	<b>161.6</b>	
1.1.2.1 Fibres	0.839	119.8	106.9	142.5	146.8	147.1	
1.1.2.2 Oil Seeds	1.115	161.7	155.8	211.7	216.9	239.6	
1.1.2.3 Other non-food Articles	1.960	109.0	104.8	115.9	116.1	117.8	
1.1.2.4 Floriculture	0.204	210.0	235.2	138.7	167.7	215.1	
<b>1.1.3 MINERALS</b>	<b>0.833</b>	<b>164.9</b>	<b>167.6</b>	<b>191.8</b>	<b>171.0</b>	<b>191.9</b>	
1.1.3.1 Metallic Minerals	0.648	159.8	162.6	188.6	163.2	188.6	
1.1.3.2 Other Minerals	0.185	183.1	185.1	203.0	198.1	203.4	
<b>1.1.4 CRUDE PETROLEUM &amp; NATURAL GAS</b>	<b>2.410</b>	<b>70.4</b>	<b>72.2</b>	<b>99.5</b>	<b>99.6</b>	<b>101.1</b>	
<b>1.2 FUEL &amp; POWER</b>	<b>13.152</b>	<b>94.0</b>	<b>92.0</b>	<b>110.7</b>	<b>114.3</b>	<b>116.0</b>	
<b>1.2.1 COAL</b>	<b>2.138</b>	<b>126.6</b>	<b>126.4</b>	<b>127.3</b>	<b>127.3</b>	<b>127.7</b>	
1.2.1.1 Coking Coal	0.647	141.8	141.6	141.9	141.9	143.4	
1.2.1.2 Non-Coking Coal	1.401	119.3	119.0	119.8	119.8	119.8	
1.2.1.3 Lignite	0.090	130.9	131.1	138.1	138.1	138.1	
<b>1.2.2 MINERAL OILS</b>	<b>7.950</b>	<b>79.2</b>	<b>78.4</b>	<b>111.0</b>	<b>117.0</b>	<b>119.7</b>	
<b>1.2.3 ELECTRICITY</b>	<b>3.064</b>	<b>109.6</b>	<b>103.4</b>	<b>98.2</b>	<b>98.2</b>	<b>98.2</b>	
<b>1.3 MANUFACTURED PRODUCTS</b>	<b>64.231</b>	<b>121.5</b>	<b>119.4</b>	<b>131.6</b>	<b>132.0</b>	<b>133.0</b>	
<b>1.3.1 MANUFACTURE OF FOOD PRODUCTS</b>	<b>9.122</b>	<b>141.4</b>	<b>139.8</b>	<b>155.8</b>	<b>155.9</b>	<b>157.4</b>	
1.3.1.1 Processing and Preserving of meat	0.134	137.2	138.1	144.3	141.8	142.3	
1.3.1.2 Processing and Preserving of fish, Crustaceans, Molluscs and products thereof	0.204	139.0	140.1	139.7	142.2	140.5	
1.3.1.3 Processing and Preserving of fruit and Vegetables	0.138	120.2	119.9	121.9	121.4	122.2	
1.3.1.4 Vegetable and Animal oils and Fats	2.643	143.5	134.1	184.5	185.9	188.4	
1.3.1.5 Dairy products	1.165	146.9	145.6	147.9	148.4	148.3	
1.3.1.6 Grain mill products	2.010	143.5	144.4	144.0	143.4	144.3	
1.3.1.7 Starches and Starch products	0.110	115.9	107.7	124.7	125.9	128.8	
1.3.1.8 Bakery products	0.215	138.1	137.5	142.9	142.7	143.1	
1.3.1.9 Sugar, Molasses & honey	1.163	118.4	120.1	118.8	117.9	120.8	
1.3.1.10 Cocoa, Chocolate and Sugar confectionery	0.175	128.0	127.5	128.9	129.3	128.3	
1.3.1.11 Macaroni, Noodles, Couscous and Similar farinaceous products	0.026	132.3	134.4	133.5	131.9	132.0	
1.3.1.12 Tea & Coffee products	0.371	166.5	189.7	178.5	170.3	166.4	
1.3.1.13 Processed condiments & salt	0.163	147.0	146.0	153.8	152.9	154.7	
1.3.1.14 Processed ready to eat food	0.024	132.2	132.6	140.2	140.3	137.1	
1.3.1.15 Health supplements	0.225	142.9	146.8	147.5	151.5	154.3	
1.3.1.16 Prepared animal feeds	0.356	170.5	168.5	197.7	200.8	209.3	
<b>1.3.2 MANUFACTURE OF BEVERAGES</b>	<b>0.909</b>	<b>124.5</b>	<b>125.3</b>	<b>125.6</b>	<b>125.9</b>	<b>127.0</b>	
1.3.2.1 Wines & spirits	0.408	120.2	120.3	122.4	123.0	123.4	
1.3.2.2 Malt liquors and Malt	0.225	126.5	128.8	127.4	127.8	129.3	
1.3.2.3 Soft drinks; Production of mineral waters and Other bottled waters	0.275	129.4	129.9	128.8	128.6	130.5	
<b>1.3.3 MANUFACTURE OF TOBACCO PRODUCTS</b>	<b>0.514</b>	<b>157.2</b>	<b>153.0</b>	<b>157.6</b>	<b>161.0</b>	<b>160.3</b>	
1.3.3.1 Tobacco products	0.514	157.2	153.0	157.6	161.0	160.3	

**No. 21: Wholesale Price Index (Contd.)**  
 (Base: 2011-12 = 100)

Commodities	Weight	2020-21	2020	2021			
				Aug.	Jun.	Jul. (P)	Aug. (P)
<b>1.3.4 MANUFACTURE OF TEXTILES</b>	<b>4.881</b>	<b>117.6</b>	<b>113.0</b>	<b>129.7</b>	<b>130.5</b>	<b>132.2</b>	
1.3.4.1 Preparation and Spinning of textile fibres	2.582	106.6	100.3	121.2	121.0	123.2	
1.3.4.2 Weaving & Finishing of textiles	1.509	131.7	128.5	142.4	145.4	146.8	
1.3.4.3 Knitted and Crocheted fabrics	0.193	115.2	115.1	122.1	123.3	124.1	
1.3.4.4 Made-up textile articles, Except apparel	0.299	132.3	131.3	134.6	135.3	136.4	
1.3.4.5 Cordage, Rope, Twine and Netting	0.098	155.6	148.8	171.0	168.4	167.7	
1.3.4.6 Other textiles	0.201	116.3	114.4	122.2	123.9	123.0	
<b>1.3.5 MANUFACTURE OF WEARING APPAREL</b>	<b>0.814</b>	<b>138.6</b>	<b>137.5</b>	<b>141.2</b>	<b>140.8</b>	<b>142.0</b>	
1.3.5.1 Manufacture of Wearing Apparel (woven), Except fur Apparel	0.593	138.1	137.2	140.4	140.3	141.3	
1.3.5.2 Knitted and Crocheted apparel	0.221	139.8	138.3	143.2	142.2	143.8	
<b>1.3.6 MANUFACTURE OF LEATHER AND RELATED PRODUCTS</b>	<b>0.535</b>	<b>117.9</b>	<b>118.1</b>	<b>117.7</b>	<b>118.8</b>	<b>118.2</b>	
1.3.6.1 Tanning and Dressing of leather; Dressing and Dyeing of fur	0.142	101.1	102.5	102.5	102.1	103.6	
1.3.6.2 Luggage, Handbags, Saddlery and Harness	0.075	138.6	139.0	140.5	140.1	139.8	
1.3.6.3 Footwear	0.318	120.6	120.1	119.1	121.2	119.6	
<b>1.3.7 MANUFACTURE OF WOOD AND PRODUCTS OF WOOD AND CORK</b>	<b>0.772</b>	<b>134.6</b>	<b>133.6</b>	<b>138.7</b>	<b>140.0</b>	<b>140.4</b>	
1.3.7.1 Saw milling and Planing of wood	0.124	120.7	119.2	124.3	126.5	127.9	
1.3.7.2 Veneer sheets; Manufacture of plywood, Laminboard, Particle board and Other panels and Boards	0.493	136.6	135.4	140.4	141.2	141.1	
1.3.7.3 Builder's carpentry and Joinery	0.036	185.8	188.0	194.5	194.2	193.8	
1.3.7.4 Wooden containers	0.119	125.7	124.8	129.9	132.8	135.1	
<b>1.3.8 MANUFACTURE OF PAPER AND PAPER PRODUCTS</b>	<b>1.113</b>	<b>121.7</b>	<b>119.0</b>	<b>133.0</b>	<b>132.7</b>	<b>132.5</b>	
1.3.8.1 Pulp, Paper and Paperboard	0.493	124.1	120.6	136.5	135.7	135.7	
1.3.8.2 Corrugated paper and Paperboard and Containers of paper and Paperboard	0.314	122.2	119.3	134.9	134.7	134.7	
1.3.8.3 Other articles of paper and Paperboard	0.306	117.4	116.1	125.3	125.8	125.1	
<b>1.3.9 PRINTING AND REPRODUCTION OF RECORDED MEDIA</b>	<b>0.676</b>	<b>153.8</b>	<b>152.7</b>	<b>153.6</b>	<b>155.8</b>	<b>156.6</b>	
1.3.9.1 Printing	0.676	153.8	152.7	153.6	155.8	156.6	
<b>1.3.10 MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS</b>	<b>6.465</b>	<b>118.2</b>	<b>116.1</b>	<b>128.3</b>	<b>128.8</b>	<b>130.2</b>	
1.3.10.1 Basic chemicals	1.433	118.6	115.0	135.8	136.5	137.7	
1.3.10.2 Fertilizers and Nitrogen compounds	1.485	123.6	123.7	126.4	127.2	128.1	
1.3.10.3 Plastic and Synthetic rubber in primary form	1.001	116.7	112.4	133.5	133.8	136.9	
1.3.10.4 Pesticides and Other agrochemical products	0.454	124.4	125.3	128.4	127.9	129.5	
1.3.10.5 Paints, Varnishes and Similar coatings, Printing ink and Mastics	0.491	114.9	112.7	124.3	125.0	126.6	
1.3.10.6 Soap and Detergents, Cleaning and Polishing preparations, Perfumes and Toilet preparations	0.612	120.6	119.6	126.2	126.7	127.6	
1.3.10.7 Other chemical products	0.692	115.1	113.2	124.7	125.1	126.0	
1.3.10.8 Man-made fibres	0.296	93.7	88.1	102.5	102.4	103.5	
<b>1.3.11 MANUFACTURE OF PHARMACEUTICALS, MEDICINAL CHEMICAL AND BOTANICAL PRODUCTS</b>	<b>1.993</b>	<b>130.9</b>	<b>130.7</b>	<b>134.7</b>	<b>135.1</b>	<b>134.0</b>	
1.3.11.1 Pharmaceuticals, Medicinal chemical and Botanical products	1.993	130.9	130.7	134.7	135.1	134.0	
<b>1.3.12 MANUFACTURE OF RUBBER AND PLASTICS PRODUCTS</b>	<b>2.299</b>	<b>111.3</b>	<b>107.6</b>	<b>120.6</b>	<b>120.5</b>	<b>122.2</b>	
1.3.12.1 Rubber Tyres and Tubes; Retreading and Rebuilding of Rubber Tyres	0.609	98.3	97.4	102.3	102.4	103.9	
1.3.12.2 Other Rubber Products	0.272	93.3	91.7	99.9	100.2	100.1	
1.3.12.3 Plastics products	1.418	120.3	115.0	132.4	132.2	134.3	
<b>1.3.13 MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS</b>	<b>3.202</b>	<b>117.6</b>	<b>116.6</b>	<b>121.4</b>	<b>121.9</b>	<b>121.9</b>	
1.3.13.1 Glass and Glass products	0.295	127.2	126.3	136.3	137.4	135.9	
1.3.13.2 Refractory products	0.223	109.5	107.7	113.0	113.4	114.0	
1.3.13.3 Clay Building Materials	0.121	109.3	107.0	110.9	109.0	109.4	
1.3.13.4 Other Porcelain and Ceramic Products	0.222	109.5	106.9	110.4	111.5	111.4	
1.3.13.5 Cement, Lime and Plaster	1.645	120.9	120.3	124.5	125.0	125.5	

**No. 21: Wholesale Price Index (Contd.)**

(Base: 2011-12 = 100)

Commodities	Weight	2020-21	2020	2021		
				Aug.	Jun.	Jul. (P)
1.3.13.6 Articles of Concrete, Cement and Plaster	0.292	125.3	124.1	129.0	128.3	127.6
1.3.13.7 Cutting, Shaping and Finishing of Stone	0.234	121.1	119.7	123.3	123.9	121.5
1.3.13.8 Other Non-Metallic Mineral Products	0.169	78.9	77.6	81.5	85.5	85.5
<b>1.3.14 MANUFACTURE OF BASIC METALS</b>	<b>9.646</b>	<b>111.4</b>	<b>106.5</b>	<b>134.0</b>	<b>134.0</b>	<b>135.8</b>
1.3.14.1 Inputs into steel making	1.411	109.2	101.4	138.2	137.4	141.8
1.3.14.2 Metallic Iron	0.653	113.3	108.3	143.4	140.9	142.9
1.3.14.3 Mild Steel - Semi Finished Steel	1.274	99.8	97.7	116.5	115.3	116.7
1.3.14.4 Mild Steel -Long Products	1.081	112.0	104.5	131.7	131.4	132.8
1.3.14.5 Mild Steel - Flat products	1.144	117.2	108.8	154.9	156.3	156.1
1.3.14.6 Alloy steel other than Stainless Steel- Shapes	0.067	108.3	103.2	129.4	127.6	128.2
1.3.14.7 Stainless Steel - Semi Finished	0.924	108.7	102.7	133.3	134.0	135.7
1.3.14.8 Pipes & tubes	0.205	127.9	125.3	145.4	146.8	149.9
1.3.14.9 Non-ferrous metals incl. precious metals	1.693	112.3	109.4	132.5	133.7	135.4
1.3.14.10 Castings	0.925	109.1	107.9	116.5	117.1	118.2
1.3.14.11 Forgings of steel	0.271	145.7	143.8	155.6	154.7	155.8
<b>1.3.15 MANUFACTURE OF FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT</b>	<b>3.155</b>	<b>115.9</b>	<b>112.5</b>	<b>127.5</b>	<b>128.7</b>	<b>129.3</b>
1.3.15.1 Structural Metal Products	1.031	114.1	110.6	122.3	122.5	123.0
1.3.15.2 Tanks, Reservoirs and Containers of Metal	0.660	127.8	120.6	152.3	156.2	156.5
1.3.15.3 Steam generators, Except Central Heating Hot Water Boilers	0.145	98.9	99.0	96.8	96.8	96.8
1.3.15.4 Forging, Pressing, Stamping and Roll-Forming of Metal; Powder Metallurgy	0.383	96.7	95.6	109.6	112.1	114.4
1.3.15.5 Cutlery, Hand Tools and General Hardware	0.208	102.9	102.1	106.4	106.5	107.2
1.3.15.6 Other Fabricated Metal Products	0.728	125.0	122.5	134.1	133.9	134.4
<b>1.3.16 MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS</b>	<b>2.009</b>	<b>109.8</b>	<b>109.5</b>	<b>112.7</b>	<b>113.2</b>	<b>113.2</b>
1.3.16.1 Electronic Components	0.402	99.1	99.0	103.4	104.1	105.2
1.3.16.2 Computers and Peripheral Equipment	0.336	134.8	135.1	134.8	134.6	134.6
1.3.16.3 Communication Equipment	0.310	114.9	114.2	120.7	119.7	119.3
1.3.16.4 Consumer Electronics	0.641	98.5	98.0	101.6	102.8	103.0
1.3.16.5 Measuring, Testing, Navigating and Control equipment	0.181	107.7	106.0	108.5	108.5	107.7
1.3.16.6 Watches and Clocks	0.076	141.8	142.8	142.4	143.3	143.2
1.3.16.7 Irradiation, Electromedical and Electrotherapeutic equipment	0.055	102.8	103.0	106.6	108.5	104.0
1.3.16.8 Optical instruments and Photographic equipment	0.008	102.7	108.8	98.5	98.5	98.5
<b>1.3.17 MANUFACTURE OF ELECTRICAL EQUIPMENT</b>	<b>2.930</b>	<b>113.6</b>	<b>111.7</b>	<b>120.2</b>	<b>118.9</b>	<b>121.5</b>
1.3.17.1 Electric motors, Generators, Transformers and Electricity distribution and Control apparatus	1.298	113.2	111.0	118.0	114.8	119.3
1.3.17.2 Batteries and Accumulators	0.236	117.1	116.8	117.5	118.1	120.5
1.3.17.3 Fibre optic cables for data transmission or live transmission of images	0.133	98.1	94.3	101.1	100.2	101.6
1.3.17.4 Other electronic and Electric wires and Cables	0.428	115.9	112.6	137.1	137.7	138.2
1.3.17.5 Wiring devices, Electric lighting & display equipment	0.263	111.1	110.9	113.8	114.2	113.6
1.3.17.6 Domestic appliances	0.366	119.7	118.6	125.2	125.7	126.8
1.3.17.7 Other electrical equipment	0.206	109.5	108.4	113.6	112.8	114.8
<b>1.3.18 MANUFACTURE OF MACHINERY AND EQUIPMENT</b>	<b>4.789</b>	<b>114.0</b>	<b>113.7</b>	<b>118.1</b>	<b>119.2</b>	<b>119.4</b>
1.3.18.1 Engines and Turbines, Except aircraft, Vehicle and Two wheeler engines	0.638	106.3	105.5	116.6	119.3	119.6
1.3.18.2 Fluid power equipment	0.162	119.4	119.4	120.3	120.1	121.0
1.3.18.3 Other pumps, Compressors, Taps and Valves	0.552	111.6	112.4	113.9	113.7	114.8
1.3.18.4 Bearings, Gears, Gearing and Driving elements	0.340	111.8	109.6	117.5	118.8	118.7
1.3.18.5 Ovens, Furnaces and Furnace burners	0.008	80.2	81.6	74.2	74.2	75.1
1.3.18.6 Lifting and Handling equipment	0.285	113.4	113.2	116.8	116.8	117.7

**No. 21: Wholesale Price Index (Concl.)**

(Base: 2011-12 = 100)

Commodities	Weight	2020-21	2020		2021	
			Aug.	Jun.	Jul. (P)	Aug. (P)
1.3.18.7 Office machinery and Equipment	0.006	130.2	130.2	130.2	130.2	130.2
1.3.18.8 Other general-purpose machinery	0.437	128.7	128.3	132.9	134.8	134.3
1.3.18.9 Agricultural and Forestry machinery	0.833	121.6	121.5	124.8	126.0	126.9
1.3.18.10 Metal-forming machinery and Machine tools	0.224	108.4	107.7	110.3	114.8	115.1
1.3.18.11 Machinery for mining, Quarrying and Construction	0.371	75.7	75.6	76.8	76.4	78.1
1.3.18.12 Machinery for food, Beverage and Tobacco processing	0.228	128.0	128.5	128.5	128.3	129.0
1.3.18.13 Machinery for textile, Apparel and Leather production	0.192	121.9	122.2	123.8	123.3	121.7
1.3.18.14 Other special-purpose machinery	0.468	128.7	127.5	134.1	136.2	133.6
1.3.18.15 Renewable electricity generating equipment	0.046	65.2	64.3	66.4	66.0	66.1
<b>1.3.19 MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS</b>	<b>4.969</b>	<b>117.8</b>	<b>117.5</b>	<b>120.5</b>	<b>120.5</b>	<b>121.7</b>
1.3.19.1 Motor vehicles	2.600	119.4	118.5	120.7	120.8	121.5
1.3.19.2 Parts and Accessories for motor vehicles	2.368	116.1	116.4	120.2	120.2	121.9
<b>1.3.20 MANUFACTURE OF OTHER TRANSPORT EQUIPMENT</b>	<b>1.648</b>	<b>126.2</b>	<b>125.9</b>	<b>128.6</b>	<b>131.1</b>	<b>130.9</b>
1.3.20.1 Building of ships and Floating structures	0.117	158.8	158.8	158.8	158.9	158.9
1.3.20.2 Railway locomotives and Rolling stock	0.110	105.0	105.8	103.8	103.7	104.0
1.3.20.3 Motor cycles	1.302	124.7	124.5	127.3	130.5	130.1
1.3.20.4 Bicycles and Invalid carriages	0.117	130.3	127.9	136.3	136.4	136.4
1.3.20.5 Other transport equipment	0.002	128.5	127.5	132.4	132.3	132.6
<b>1.3.21 MANUFACTURE OF FURNITURE</b>	<b>0.727</b>	<b>133.2</b>	<b>128.9</b>	<b>144.8</b>	<b>145.9</b>	<b>147.1</b>
1.3.21.1 Furniture	0.727	133.2	128.9	144.8	145.9	147.1
<b>1.3.22 OTHER MANUFACTURING</b>	<b>1.064</b>	<b>132.4</b>	<b>138.2</b>	<b>138.4</b>	<b>137.0</b>	<b>133.3</b>
1.3.22.1 Jewellery and Related articles	0.996	130.5	136.8	136.7	135.1	131.2
1.3.22.2 Musical instruments	0.001	173.7	172.6	195.3	203.3	183.4
1.3.22.3 Sports goods	0.012	132.0	131.0	137.5	137.8	138.7
1.3.22.4 Games and Toys	0.005	142.4	141.4	150.4	148.7	151.2
1.3.22.5 Medical and Dental instruments and Supplies	0.049	167.4	167.5	170.7	171.3	171.3
<b>2 FOOD INDEX</b>	<b>24.378</b>	<b>153.4</b>	<b>154.3</b>	<b>158.7</b>	<b>159.3</b>	<b>159.6</b>

**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	2019-20	2020-21	April-July		July	
				2020-21	2021-22	2020	2021
	1	2	3	4	5	6	7
<b>General Index</b>	100.00	129.0	118.1	92.5	124.0	117.9	131.4
<b>1 Sectoral Classification</b>							
1.1 Mining	14.37	109.6	101.0	84.9	106.4	87.5	104.6
1.2 Manufacturing	77.63	129.6	117.2	88.0	122.3	118.5	130.9
1.3 Electricity	7.99	158.4	157.6	149.7	172.4	166.3	184.7
<b>2 Use-Based Classification</b>							
2.1 Primary Goods	34.05	127.0	118.1	105.5	125.0	114.3	128.5
2.2 Capital Goods	8.22	93.3	75.9	44.3	78.7	70.9	91.8
2.3 Intermediate Goods	17.22	137.7	124.7	90.5	136.2	125.4	143.1
2.4 Infrastructure/ Construction Goods	12.34	136.6	124.7	88.1	138.5	128.6	143.5
2.5 Consumer Durables	12.84	119.0	101.2	55.7	99.8	99.4	119.5
2.6 Consumer Non-Durables	15.33	145.3	142.1	126.2	141.3	149.3	146.6

Source : National Statistical 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 2021-22 (Budget Estimates)	April - August			
		2021-22 (Actuals)	2020-21 (Actuals)	Percentage to Budget Estimates	
				2021-22	2020-21
	1	2	3	4	5
<b>1 Revenue Receipts</b>	<b>1788424</b>	<b>793493</b>	<b>370642</b>	<b>44.4</b>	<b>18.3</b>
1.1 Tax Revenue (Net)	1545396	644843	284495	41.7	17.4
1.2 Non-Tax Revenue	243028	148650	86147	61.2	22.4
<b>2 Non-Debt Capital Receipt</b>	<b>188000</b>	<b>15179</b>	<b>6664</b>	<b>8.1</b>	<b>3.0</b>
2.1 Recovery of Loans	13000	6808	6635	52.4	44.3
2.2 Other Receipts	175000	8371	29	4.8	0.0
<b>3 Total Receipts (excluding borrowings) (1+2)</b>	<b>1976424</b>	<b>808672</b>	<b>377306</b>	<b>40.9</b>	<b>16.8</b>
4 Revenue Expenditure	2929000	1104813	1113206	37.7	42.3
4.1 Interest Payments	809701	278371	237662	34.4	33.6
5 Capital Expenditure	554236	171868	134447	31.0	32.6
<b>6 Total Expenditure (4+5)</b>	<b>3483236</b>	<b>1276681</b>	<b>1247653</b>	<b>36.7</b>	<b>41.0</b>
<b>7 Revenue Deficit (4-1)</b>	<b>1140576</b>	<b>311320</b>	<b>742564</b>	<b>27.3</b>	<b>121.9</b>
<b>8 Fiscal Deficit (6-3)</b>	<b>1506812</b>	<b>468009</b>	<b>870347</b>	<b>31.1</b>	<b>109.3</b>
<b>9 Gross Primary Deficit (8-4.1)</b>	<b>697111</b>	<b>189638</b>	<b>632685</b>	<b>27.2</b>	<b>717.9</b>

Source: Controller General of Accounts (CGA), Ministry of Finance, Government of India and Union Budget 2021-22.

**No. 24: Treasury Bills – Ownership Pattern**

(₹ Crore)

Item	2020-21	2020		2021							
		Aug. 28	Jul. 23	Jul. 30	Aug. 6	Aug. 13	Aug. 20	Aug. 27			
				1	2	3	4	5	6	7	8
<b>1 91-day</b>											
1.1 Banks	5676	8100	11000	9355	9071	6830	7352	5990			
1.2 Primary Dealers	16740	17932	25219	23157	23161	19508	16341	14559			
1.3 State Governments	13347	44094	45482	47982	47392	53242	57542	59757			
1.4 Others	52802	157140	162217	159946	154246	151990	148785	145396			
<b>2 182-day</b>											
2.1 Banks	67473	170892	120093	119323	115123	108266	105058	103967			
2.2 Primary Dealers	30966	63853	57212	54786	56467	55123	55471	54959			
2.3 State Governments	9436	4348	12945	15355	15360	16510	16510	16510			
2.4 Others	31800	110486	112205	113457	112871	118141	118327	117804			
<b>3 364-day</b>											
3.1 Banks	119024	133144	124133	120838	118988	115351	111785	109084			
3.2 Primary Dealers	154197	93620	130828	123281	118569	107383	101534	102355			
3.3 State Governments	18510	16676	18133	19825	19260	19960	14455	19265			
3.4 Others	174501	132012	89695	94163	94214	101680	105301	101340			
<b>4 14-day Intermediate</b>											
4.1 Banks											
4.2 Primary Dealers											
4.3 State Governments	220351	138620	177522	159116	101397	82348	99600	144913			
4.4 Others	747	687	422	314	131	1372	1142	201			
<b>Total Treasury Bills (Excluding 14 day Intermediate T Bills) #</b>	694471	952296	909160	901468	884720	873986	858462	850986			

# 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

**No. 25: Auctions of Treasury Bills**

(Amount in ₹ Crore)

Date of Auction	Notified Amount	Bids Received			Bids Accepted			Total Issue (6+7)	Cut-off Price	Implicit Yield at Cut-off Price (per cent)			
		Number	Total Face Value		Number	Total Face Value							
			Competitive	Non-Competitive		Competitive	Non-Competitive						
		1	2	3	4	5	6	7	8	9	10		
<b>91-day Treasury Bills</b>													
<b>2021-22</b>													
Jul. 28	9000	107	36504	6532	33	8999	6532	15531	99.16	3.3880			
Aug. 4	9000	69	26035	6405	28	8995	6405	15400	99.16	3.3815			
Aug. 11	9000	110	32280	8753	33	8997	8753	17750	99.16	3.3892			
Aug. 18	9000	94	47785	8603	22	8997	8603	17600	99.18	3.3280			
Aug. 25	9000	112	47712	6602	15	8998	6602	15600	99.19	3.2958			
<b>182-day Treasury Bills</b>													
<b>2021-22</b>													
Jul. 28	4000	121	26270	2205	18	3995	2205	6200	98.27	3.5298			
Aug. 4	4000	100	28032	3	7	3997	3	4000	98.29	3.4926			
Aug. 11	4000	85	23841	1000	10	4000	1000	5000	98.30	3.4695			
Aug. 18	4000	68	18780	0	26	4000	0	4000	98.30	3.4600			
Aug. 25	4000	103	18302	0	24	4000	0	4000	98.31	3.4490			
<b>364-day Treasury Bills</b>													
<b>2021-22</b>													
Jul. 28	4000	141	22648	1600	16	4000	1600	5600	96.41	3.7299			
Aug. 4	4000	135	22569	0	21	4000	0	4000	96.44	3.6983			
Aug. 11	4000	128	14875	701	39	3999	701	4700	96.45	3.6908			
Aug. 18	4000	89	13900	0	25	4000	0	4000	96.49	3.6498			
Aug. 25	4000	120	13535	4725	39	4000	4725	8725	96.49	3.6493			

## 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	2, 2021	1.90-3.40	3.24
August	3, 2021	1.90-3.40	3.18
August	4, 2021	1.90-3.40	3.17
August	5, 2021	1.90-3.40	3.14
August	6, 2021	1.90-3.45	3.20
August	7, 2021	2.70-3.25	2.92
August	9, 2021	1.90-3.40	3.18
August	10, 2021	1.90-3.40	3.19
August	11, 2021	1.90-3.40	3.22
August	12, 2021	1.90-3.45	3.21
August	13, 2021	1.90-3.45	3.15
August	17, 2021	1.90-3.40	3.23
August	18, 2021	1.90-3.40	3.19
August	20, 2021	1.95-3.40	3.25
August	21, 2021	2.60-3.00	2.82
August	23, 2021	1.95-3.40	3.21
August	24, 2021	1.95-3.40	3.15
August	25, 2021	1.95-3.50	3.20
August	26, 2021	1.95-3.45	3.23
August	27, 2021	1.95-3.40	3.17
August	30, 2021	1.95-3.40	3.21
August	31, 2021	2.00-3.40	3.18
September	1, 2021	1.95-3.40	3.18
September	2, 2021	1.95-3.40	3.16
September	3, 2021	1.95-3.40	3.18
September	4, 2021	2.70-3.25	2.90
September	6, 2021	1.95-3.40	3.16
September	7, 2021	1.95-3.40	3.16
September	8, 2021	1.95-3.45	3.14
September	9, 2021	1.95-3.40	3.14
September	13, 2021	1.95-3.40	3.16
September	14, 2021	1.95-3.40	3.14
September	15, 2021	1.95-3.40	3.18

**Note:** Includes Notice Money.

**No. 27: Certificates of Deposit**

Item	2020		2021		
	Aug. 28		Jul. 16	Jul. 30	Aug. 13
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	85855.20	64586.90	64304.10	63488.94	64222.13
1.1 Issued during the fortnight (₹ Crore)	3502.17	270.74	950.89	73.40	6332.44
2 Rate of Interest (per cent)	3.44-6.37	3.68-4.21	4.05-4.85	4.31-4.31	3.27-4.31

**No. 28: Commercial Paper**

Item	2020		2021		
	Aug. 31		Jul. 15	Jul. 31	Aug. 15
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	372600.80	471218.00	414981.65	419726.00	391504.85
1.1 Reported during the fortnight (₹ Crore)	68405.75	117197.20	149052.15	148470.35	73288.65
2 Rate of Interest (per cent)	3.17-13.14	3.32-12.80	3.38-12.94	3.26-12.01	3.15-12.83

**No. 29: Average Daily Turnover in Select Financial Markets**

(₹ Crore)

Item	2020-21	2020		2021				
		Aug. 28	Jul. 23	Jul. 30	Aug. 6	Aug. 13	Aug. 20	Aug. 27
	1	2	3	4	5	6	7	8
1 Call Money	17461	19387	14355	13281	10547	12956	8975	12845
2 Notice Money	2604	5150	403	3801	2803	409	5778	1311
3 Term Money	757	492	809	575	633	653	368	483
4 Triparty Repo	421118	420081	498517	652552	480569	466369	651549	577354
5 Market Repo	337341	388951	279810	337951	288407	273545	359103	301952
6 Repo in Corporate Bond	2990	300	14177	7200	4301	1813	156	4152
7 Forex (US \$ million)	67793	63978	72154	77056	66680	65113	70936	70694
8 Govt. of India Dated Securities	62490	69966	57285	40423	44260	44242	65235	47477
9 State Govt. Securities	5080	3552	4635	5104	5440	5115	5040	5068
10 Treasury Bills								
10.1 91-Day	4970	4053	4268	3883	4513	4676	2081	3081
10.2 182-Day	4870	9139	3221	3251	2102	4023	5063	4605
10.3 364-Day	4010	2105	2266	5958	3002	9756	8745	5220
10.4 Cash Management Bills	1490							
11 Total Govt. Securities (8+9+10)	82910	88815	71676	58619	59317	67813	86165	65450
11.1 RBI	-	4457	5251	224	353	5082	222	5128

**No. 30: New Capital Issues By Non-Government Public Limited Companies**

(Amount in ₹ Crore)

Security & Type of Issue	2020-21		2020-21 (Apr.-Aug.)		2021-22 (Apr.-Aug.) *		Aug. 2020		Aug. 2021 *	
	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
<b>1 Equity Shares</b>	<b>74</b>	<b>102062</b>	<b>19</b>	<b>75159</b>	<b>47</b>	<b>46663</b>	<b>9</b>	<b>6108</b>	<b>15</b>	<b>20546</b>
1A Premium	73	97648	19	71945	44	45821	9	5832	14	20298
1.1 Public	53	38004	10	15539	38	45894	2	11	14	20517
1.1.1 Premium	53	34848	10	13035	38	45203	2	6	14	20298
1.2 Rights	21	64059	9	59620	9	768	7	6096	1	30
1.2.1 Premium	20	62800	9	58911	6	618	7	5825	—	—
<b>2 Preference Shares</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
2.1 Public	—	—	—	—	—	—	—	—	—	—
2.2 Rights	—	—	—	—	—	—	—	—	—	—
<b>3 Bonds &amp; Debentures</b>	<b>16</b>	<b>5806</b>	<b>5</b>	<b>882</b>	<b>10</b>	<b>5389</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
3.1 Convertible	—	—	—	—	—	—	—	—	—	—
3.1.1 Public	—	—	—	—	—	—	—	—	—	—
3.1.2 Rights	—	—	—	—	—	—	—	—	—	—
3.2 Non-Convertible	16	5806	5	882	10	5389	—	—	—	—
3.2.1 Public	16	5806	5	882	10	5389	—	—	—	—
3.2.2 Rights	—	—	—	—	—	—	—	—	—	—
<b>4 Total(1+2+3)</b>	<b>90</b>	<b>107868</b>	<b>24</b>	<b>76041</b>	<b>57</b>	<b>52052</b>	<b>9</b>	<b>6108</b>	<b>15</b>	<b>20546</b>
4.1 Public	69	43809	15	16420	48	51284	2	11	14	20517
4.2 Rights	21	64059	9	59620	9	768	7	6096	1	30

**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 of numbers.

**Source :** Securities and Exchange Board of India.

\* : Data is Provisional

## External Sector

### No. 31: Foreign Trade

Item	Unit	2020-21	2020		2021			
			Aug.	Apr.	May	Jun.	Jul.	Aug.
		1	2	3	4	5	6	7
1 Exports	₹ Crore	2159043	170471	228981	236647	239189	263915	246863
	US \$ Million	291808	22829	30747	32299	32517	35412	33277
1.1 Oil	₹ Crore	190896	14200	26978	38947	29242	43507	34507
	US \$ Million	25804	1902	3623	5316	3975	5838	4651
1.2 Non-oil	₹ Crore	1968147	156271	202003	197700	209946	220409	212357
	US \$ Million	266004	20928	27125	26983	28542	29574	28625
2 Imports	₹ Crore	2915958	231737	339949	282634	307955	342801	349302
	US \$ Million	394436	31034	45648	38576	41865	45997	47086
2.1 Oil	₹ Crore	611353	48178	80324	69252	78299	93407	86458
	US \$ Million	82684	6452	10786	9452	10644	12533	11654
2.2 Non-oil	₹ Crore	2304605	183559	259625	213382	229656	249394	262844
	US \$ Million	311752	24582	34862	29124	31221	33464	35431
3 Trade Balance	₹ Crore	-756914	-61266	-110968	-45987	-68767	-78886	-102439
	US \$ Million	-102627	-8205	-14901	-6277	-9349	-10585	-13809
3.1 Oil	₹ Crore	-420457	-33978	-53345	-30305	-49057	-49900	-51951
	US \$ Million	-56880	-4550	-7163	-4136	-6669	-6696	-7003
3.2 Non-oil	₹ Crore	-336458	-27288	-57623	-15683	-19710	-28985	-50487
	US \$ Million	-45748	-3654	-7737	-2140	-2679	-3889	-6806

Source: DGCI&S and Ministry of Commerce & Industry.

### No. 32: Foreign Exchange Reserves

Item	Unit	2020	2021					
			Oct. 2	Aug. 27	Sep. 3	Sep. 10	Sep. 17	Sep. 24
		1	2	3	4	5	6	7
<b>1 Total Reserves</b>	₹ Crore	3990840	4669426	4690783	4714298	4701267	4709016	4723970
	US \$ Million	545638	633558	642453	641113	639642	638646	637477
1.1 Foreign Currency Assets	₹ Crore	3679213	4212584	4233398	4256601	4248108	4252509	4264251
	US \$ Million	503046	571600	579813	578879	577986	576731	575451
1.2 Gold	₹ Crore	266852	275932	278053	276990	272700	275988	278316
	US \$ Million	36486	37441	38083	37669	37103	37430	37558
1.3 SDRs	Volume (Metric Tonnes)	668.25	724.24	726.11	728.91	733.57	739.17	744.77
	SDRs Million	1048	13657	13657	13657	13657	13657	13657
1.4 Reserve Tranche Position in IMF	₹ Crore	10794	143028	141913	142930	142839	142889	142576
	US \$ Million	1476	19407	19437	19438	19434	19379	19240

\* Difference,if any, is due to rounding off.

### No. 33: Non-Resident Deposits

(US\$ Million)

Scheme	Outstanding					Flows	
	2020-21	2020		2021		2020-21	2021-22
		Aug.	Jul.	Aug.	Apr.-Aug.	Apr.-Aug.	
<b>1 NRI Deposits</b>	<b>141895</b>	<b>137812</b>	<b>141791</b>	<b>141521</b>	<b>4863</b>	<b>2439</b>	
1.1 FCNR(B)	20473	22468	19599	19331	-1776	-1142	
1.2 NR(E)RA	102579	98436	102989	102667	6042	2464	
1.3 NRO	18842	16908	19203	19523	597	1117	

**No. 34: Foreign Investment Inflows**

(US\$ Million)

Item	2020-21	2020-21	2021-22	2020	2021	
		Apr.-Aug.	Apr.-Aug.	Aug.	Jul.	Aug.
	1	2	3	4	5	6
<b>1.1 Net Foreign Direct Investment (1.1.1–1.1.2)</b>	<b>43955</b>	<b>21303</b>	<b>19185</b>	<b>18247</b>	<b>2249</b>	<b>5040</b>
<b>1.1.1 Direct Investment to India (1.1.1.1–1.1.2)</b>	<b>54927</b>	<b>25065</b>	<b>26030</b>	<b>18699</b>	<b>2954</b>	<b>5900</b>
<b>1.1.1.1 Gross Inflows/Gross Investments</b>	<b>81973</b>	<b>36434</b>	<b>36323</b>	<b>19515</b>	<b>4854</b>	<b>8383</b>
1.1.1.1.1 Equity	61088	27668	27218	17604	2966	6350
1.1.1.1.1.1 Government (SIA/FIPB)	948	171	286	64	2	174
1.1.1.1.1.2 RBI	51597	24514	17570	17314	2373	4587
1.1.1.1.1.3 Acquisition of shares	7091	2414	8792	109	473	1471
1.1.1.1.1.4 Equity capital of unincorporated bodies	1452	570	570	118	118	118
1.1.1.1.2 Reinvested earnings	16935	6653	7000	1372	1372	1372
1.1.1.1.3 Other capital	3950	2113	2105	539	516	661
<b>1.1.1.2 Repatriation/Disinvestment</b>	<b>27046</b>	<b>11368</b>	<b>10293</b>	<b>817</b>	<b>1900</b>	<b>2483</b>
1.1.1.2.1 Equity	26983	11355	10020	815	1746	2456
1.1.1.2.2 Other capital	63	14	273	2	154	27
<b>1.1.2 Foreign Direct Investment by India (1.1.2.1+1.1.2.2+1.1.2.3–1.1.2.4)</b>	<b>10972</b>	<b>3762</b>	<b>6845</b>	<b>451</b>	<b>705</b>	<b>861</b>
1.1.2.1 Equity capital	5583	1983	3520	329	647	492
1.1.2.2 Reinvested Earnings	3013	1255	1262	251	251	251
1.1.2.3 Other Capital	6688	1317	3373	196	302	390
1.1.2.4 Repatriation/Disinvestment	4313	793	1310	325	496	272
<b>1.2 Net Portfolio Investment (1.2.1+1.2.2+1.2.3–1.2.4)</b>	<b>36137</b>	<b>6461</b>	<b>2057</b>	<b>5347</b>	<b>-1600</b>	<b>3255</b>
1.2.1 GDRs/ADRs	—	—	—	—	—	—
1.2.2 FIIs	38725	7409	2346	5593	-1149	3117
1.2.3 Offshore funds and others	—	—	—	—	—	—
1.2.4 Portfolio investment by India	2589	948	289	246	451	-138
<b>1 Foreign Investment Inflows</b>	<b>80092</b>	<b>27764</b>	<b>21242</b>	<b>23595</b>	<b>649</b>	<b>8295</b>

**No. 35: Outward Remittances under the Liberalised Remittance Scheme (LRS) for Resident Individuals**

(US\$ Million)

Item	2020-21	2020	2021		
		Aug.	Jun.	Jul.	Aug.
	1	2	3	4	5
<b>1 Outward Remittances under the LRS</b>	<b>12684.40</b>	<b>1156.62</b>	<b>1232.22</b>	<b>1308.47</b>	<b>1965.35</b>
1.1 Deposit	680.37	46.55	64.32	46.93	58.04
1.2 Purchase of immovable property	62.75	5.85	10.02	6.89	7.39
1.3 Investment in equity/debt	471.80	27.37	66.91	50.21	46.31
1.4 Gift	1586.24	124.99	178.21	175.22	191.05
1.5 Donations	12.59	0.68	1.59	0.78	0.75
1.6 Travel	3239.67	303.21	277.65	346.91	574.22
1.7 Maintenance of close relatives	2680.10	232.86	241.57	243.23	284.83
1.8 Medical Treatment	29.75	1.65	2.52	2.88	2.93
1.9 Studies Abroad	3836.12	405.48	380.23	423.35	780.26
1.10 Others	85.03	7.98	9.20	12.07	19.60

**No. 36: Indices of Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) of the Indian Rupee**

Item	2019-20	2020-21	2020		2021	
			September	August	September	August
	1	2	3	4	5	
<b>40-Currency Basket (Base: 2015-16=100)</b>						
1 Trade-weighted						
1.1 NEER	98.00	93.92	94.82	93.77	94.50	
1.2 REER	103.20	103.46	105.52	104.84	105.62	
2 Export-weighted						
2.1 NEER	97.38	93.59	94.53	93.32	94.07	
2.2 REER	102.88	102.96	105.07	104.07	104.86	
<b>6-Currency Basket (Trade-weighted)</b>						
1 Base: 2015-16 = 100						
1.1 NEER	94.92	88.47	89.23	87.14	87.83	
1.2 REER	103.60	101.79	103.71	102.76	103.63	
2 Base: 2018-19 = 100						
2.1 NEER	100.78	93.93	94.74	92.51	93.25	
2.2 REER	103.30	101.50	103.41	102.46	103.34	

**No. 37: External Commercial Borrowings (ECBs) – Registrations**

(Amount in US\$ Million)

Item	2020-21	2020		2021	
		Aug.	Jul.	Aug.	
	1	2	3	4	
1 Automatic Route					
1.1 Number	1063	97	80	90	
1.2 Amount	26799	1715	3034	2247	
2 Approval Route					
2.1 Number	13	1	1	1	
2.2 Amount	8456	36	400	600	
3 Total (1+2)					
3.1 Number	1076	98	81	91	
3.2 Amount	35255	1751	3434	2847	
4 Weighted Average Maturity (in years)	6.03	4.92	9.23	5.68	
5 Interest Rate (per cent)					
5.1 Weighted Average Margin over 6-month LIBOR or reference rate for Floating Rate Loans	1.93	1.86	2.44	1.29	
5.2 Interest rate range for Fixed Rate Loans	0.00-13.00	0.00-9.03	0.00-10.50	0.00-10.00	

**No. 38: India's Overall Balance of Payments**

(US \$ Million)

Item	Apr-Jun 2020			Apr-Jun 2021(P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
<b>Overall Balance of Payments(1+2+3)</b>	<b>242565</b>	<b>222718</b>	<b>19846</b>	<b>335303</b>	<b>303432</b>	<b>31870</b>
<b>1 CURRENT ACCOUNT (1.1+ 1.2)</b>	<b>122413</b>	<b>103355</b>	<b>19058</b>	<b>180009</b>	<b>173512</b>	<b>6497</b>
<b>1.1 MERCHANDISE</b>	<b>52210</b>	<b>63200</b>	<b>-10990</b>	<b>97432</b>	<b>128148</b>	<b>-30716</b>
<b>1.2 INVISIBLES (1.2.1+1.2.2+1.2.3)</b>	<b>70204</b>	<b>40156</b>	<b>30048</b>	<b>82578</b>	<b>45364</b>	<b>37213</b>
1.2.1 Services	46953	26195	20758	56216	30404	25812
1.2.1.1 Travel	1868	2766	-897	1597	2885	-1289
1.2.1.2 Transportation	4805	4216	588	6732	6616	116
1.2.1.3 Insurance	564	378	186	772	428	344
1.2.1.4 G.n.i.e.	148	330	-182	203	236	-32
1.2.1.5 Miscellaneous	39567	18504	21063	46912	20239	26673
1.2.1.5.1 Software Services	22623	1849	20774	27602	2466	25136
1.2.1.5.2 Business Services	11282	11514	-232	12962	11635	1327
1.2.1.5.3 Financial Services	1009	1062	-52	1201	1118	83
1.2.1.5.4 Communication Services	707	304	403	807	310	497
1.2.2 Transfers	18223	1249	16974	20917	1980	18937
1.2.2.1 Official	27	270	-243	23	308	-285
1.2.2.2 Private	18196	979	17217	20894	1672	19222
1.2.3 Income	5027	12712	-7685	5445	12980	-7536
1.2.3.1 Investment Income	3664	12043	-8379	3843	12269	-8426
1.2.3.2 Compensation of Employees	1364	669	695	1601	711	890
<b>2 CAPITAL ACCOUNT (2.1+2.2+2.3+2.4+2.5)</b>	<b>120151</b>	<b>118776</b>	<b>1376</b>	<b>155293</b>	<b>129528</b>	<b>25766</b>
<b>2.1 Foreign Investment (2.1.1+2.1.2)</b>	<b>74498</b>	<b>74384</b>	<b>114</b>	<b>102664</b>	<b>90366</b>	<b>12298</b>
2.1.1 Foreign Direct Investment	11985	12513	-528	23628	11731	11896
2.1.1.1 In India	11840	9735	2105	23086	5910	17176
2.1.1.1.1 Equity	6897	9725	-2828	17902	5818	12084
2.1.1.1.2 Reinvested Earnings	3908		3908	4255		4255
2.1.1.1.3 Other Capital	1035	10	1025	928	92	837
2.1.1.2 Abroad	144	2778	-2633	542	5821	-5279
2.1.1.2.1 Equity	144	1235	-1091	542	2381	-1839
2.1.1.2.2 Reinvested Earnings	0	753	-753	0	760	-760
2.1.1.2.3 Other Capital	0	789	-789	0	2681	-2681
2.1.2 Portfolio Investment	62514	61872	642	79036	78634	402
2.1.2.1 In India	61869	60772	1098	77499	77121	378
2.1.2.1.1 FIIs	61869	60772	1098	77499	77121	378
2.1.2.1.1.1 Equity	52749	48334	4414	69769	68832	937
2.1.2.1.1.2 Debt	9121	12437	-3317	7730	8289	-559
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0
2.1.2.2 Abroad	644	1100	-456	1537	1513	24
<b>2.2 Loans (2.2.1+2.2.2+2.2.3)</b>	<b>18847</b>	<b>16097</b>	<b>2750</b>	<b>16481</b>	<b>13328</b>	<b>3153</b>
2.2.1 External Assistance	5743	1638	4105	1893	1619	274
2.2.1.1 By India	9	20	-11	14	30	-15
2.2.1.2 To India	5733	1618	4116	1879	1589	290
2.2.2 Commercial Borrowings	4087	5246	-1159	3286	2343	942
2.2.2.1 By India	442	1003	-562	736	293	443
2.2.2.2 To India	3646	4243	-597	2550	2050	500
2.2.3 Short Term to India	9017	9213	-196	11303	9366	1937
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	9017	8412	605	9259	9366	-107
2.2.3.2 Suppliers' Credit up to 180 days	0	801	-801	2044	0	2044
<b>2.3 Banking Capital (2.3.1+2.3.2)</b>	<b>17695</b>	<b>15460</b>	<b>2235</b>	<b>20595</b>	<b>16530</b>	<b>4065</b>
2.3.1 Commercial Banks	17695	14693	3003	20595	16506	4089
2.3.1.1 Assets	6871	4383	2487	7895	6289	1606
2.3.1.2 Liabilities	10825	10310	515	12700	10217	2483
2.3.1.2.1 Non-Resident Deposits	10653	7653	3000	11212	8686	2525
2.3.2 Others	0	767	-767	0	25	-25
<b>2.4 Rupee Debt Service</b>	<b>0</b>	<b>55</b>	<b>-55</b>	<b>0</b>	<b>57</b>	<b>-57</b>
<b>2.5 Other Capital</b>	<b>9111</b>	<b>12779</b>	<b>-3668</b>	<b>15553</b>	<b>9247</b>	<b>6306</b>
<b>3 Errors &amp; Omissions</b>	<b>0</b>	<b>587</b>	<b>-587</b>	<b>0</b>	<b>393</b>	<b>-393</b>
<b>4 Monetary Movements (4.1+ 4.2)</b>	<b>0</b>	<b>19846</b>	<b>-19846</b>	<b>0</b>	<b>31870</b>	<b>-31870</b>
4.1 I.M.F.	0	0	0	0	0	0
4.2 Foreign Exchange Reserves (Increase - / Decrease +)	0	19846	-19846	0	31870	-31870

Note : P : Preliminary

**No. 39: India's Overall Balance of Payments**

Item	Apr-Jun 2020			Apr-Jun 2021(P)			(₹ Crore)
	Credit	Debit	Net	Credit	Debit	Net	
	1	2	3	4	5	6	
<b>Overall Balance of Payments(1+2+3)</b>	<b>1840444</b>	<b>1689862</b>	<b>150582</b>	<b>2473396</b>	<b>2238302</b>	<b>235094</b>	
<b>1 CURRENT ACCOUNT (1.1+ 1.2)</b>	<b>928804</b>	<b>784203</b>	<b>144601</b>	<b>1327857</b>	<b>1279929</b>	<b>47929</b>	
<b>1.1 MERCHANDISE</b>	<b>396138</b>	<b>479523</b>	<b>-83385</b>	<b>718715</b>	<b>945294</b>	<b>-226579</b>	
<b>1.2 INVISIBLES (1.2.1+1.2.2+1.2.3)</b>	<b>532666</b>	<b>304679</b>	<b>227986</b>	<b>609142</b>	<b>334634</b>	<b>274508</b>	
1.2.1 Services	356253	198750	157503	414684	224280	190404	
1.2.1.1 Travel	14176	20984	-6808	11778	21283	-9505	
1.2.1.2 Transportation	36457	31992	4465	49660	48803	857	
1.2.1.3 Insurance	4283	2872	1411	5696	3160	2536	
1.2.1.4 G.n.i.e.	1123	2504	-1381	1500	1739	-239	
1.2.1.5 Miscellaneous	300215	140399	159816	346050	149294	196756	
1.2.1.5.1 Software Services	171650	14027	157623	203612	18192	185420	
1.2.1.5.2 Business Services	85604	87365	-1762	95612	85825	9787	
1.2.1.5.3 Financial Services	7659	8056	-396	8856	8247	609	
1.2.1.5.4 Communication Services	5364	2309	3055	5951	2286	3664	
1.2.2 Transfers	138268	9477	128792	154296	14604	139692	
1.2.2.1 Official	205	2049	-1844	171	2272	-2101	
1.2.2.2 Private	138063	7428	130635	154125	12332	141793	
1.2.3 Income	38144	96452	-58308	40163	95750	-55588	
1.2.3.1 Investment Income	27797	91375	-63578	28351	90506	-62156	
1.2.3.2 Compensation of Employees	10347	5077	5270	11812	5244	6568	
<b>2 CAPITAL ACCOUNT (2.1+2.2+2.3+2.4+2.5)</b>	<b>911640</b>	<b>901204</b>	<b>10437</b>	<b>1145539</b>	<b>955474</b>	<b>190065</b>	
<b>2.1 Foreign Investment (2.1.1+2.1.2)</b>	<b>565250</b>	<b>564387</b>	<b>863</b>	<b>757313</b>	<b>666592</b>	<b>90721</b>	
2.1.1 Foreign Direct Investment	90933	94938	-4006	174292	86537	87755	
2.1.1.1 In India	89839	73864	15975	170293	43594	126698	
2.1.1.1.1 Equity	52333	73787	-21454	132055	42917	89137	
2.1.1.1.2 Reinvested Earnings	29652	0	29652	31390	0	31390	
2.1.1.1.3 Other Capital	7853	77	7776	6848	677	6171	
2.1.1.2 Abroad	1094	21074	-19981	3999	42943	-38944	
2.1.1.2.1 Equity	1094	9372	-8278	3999	17565	-13566	
2.1.1.2.2 Reinvested Earnings	0	5715	-5715	0	5603	-5603	
2.1.1.2.3 Other Capital	0	5987	-5987	0	19776	-19776	
2.1.2 Portfolio Investment	474318	469449	4869	583021	580055	2966	
2.1.2.1 In India	469430	461102	8328	571680	568891	2789	
2.1.2.1.1 FIIs	469430	461102	8328	571680	568891	2789	
2.1.2.1.1.1 Equity	400227	366734	33493	514658	507747	6911	
2.1.2.1.1.2 Debt	69203	94368	-25165	57022	61143	-4121	
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0	
2.1.2.2 Abroad	4888	8347	-3459	11341	11164	177	
<b>2.2 Loans (2.2.1+2.2.2+2.2.3)</b>	<b>143001</b>	<b>122135</b>	<b>20866</b>	<b>121576</b>	<b>98314</b>	<b>23262</b>	
2.2.1 External Assistance	43572	12426	31146	13964	11940	2024	
2.2.1.1 By India	71	153	-82	106	220	-114	
2.2.1.2 To India	43501	12273	31228	13858	11720	2138	
2.2.2 Commercial Borrowings	31013	39806	-8792	24237	17286	6951	
2.2.2.1 By India	3350	7612	-4262	5430	2164	3265	
2.2.2.2 To India	27664	32194	-4530	18807	15122	3685	
2.2.3 Short Term to India	68416	69904	-1488	83375	69088	14287	
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	68416	63825	4591	68300	69088	-788	
2.2.3.2 Suppliers' Credit up to 180 days	0	6079	-6079	15076	0	15076	
<b>2.3 Banking Capital (2.3.1+2.3.2)</b>	<b>134263</b>	<b>117303</b>	<b>16960</b>	<b>151922</b>	<b>121938</b>	<b>29984</b>	
2.3.1 Commercial Banks	134263	111481	22782	151922	121756	30166	
2.3.1.1 Assets	52131	33257	18874	58236	46388	11847	
2.3.1.2 Liabilities	82132	78223	3908	93687	75367	18319	
2.3.1.2.1 Non-Resident Deposits	80826	58063	22763	82703	64074	18629	
2.3.2 Others	0	5823	-5823	0	182	-182	
<b>2.4 Rupee Debt Service</b>	<b>0</b>	<b>419</b>	<b>-419</b>	<b>0</b>	<b>419</b>	<b>-419</b>	
<b>2.5 Other Capital</b>	<b>69126</b>	<b>96959</b>	<b>-27833</b>	<b>114727</b>	<b>68210</b>	<b>46518</b>	
<b>3 Errors &amp; Omissions</b>	<b>0</b>	<b>4456</b>	<b>-4456</b>	<b>0</b>	<b>2900</b>	<b>-2900</b>	
<b>4 Monetary Movements (4.1+ 4.2)</b>	<b>0</b>	<b>150582</b>	<b>-150582</b>	<b>0</b>	<b>235094</b>	<b>-235094</b>	
4.1 I.M.F.	0	0	0	0	0	0	
4.2 Foreign Exchange Reserves (Increase - / Decrease +)	0	150582	-150582	0	235094	-235094	

Note : P: Preliminary

**No. 40: Standard Presentation of BoP in India as per BPM6**

(US \$ Million)

Item	Apr-Jun 2020			Apr-Jun 2021(P)		
	Credit	Debit	Net	Credit	Debit	Net
				1	2	3
<b>1 Current Account (1.A+1.B+1.C)</b>						
<b>1.A Goods and Services (1.A.a+1.A.b)</b>						
<b>1.A.a Goods (1.A.a.1 to 1.A.a.3)</b>						
1.A.a.1 General merchandise on a BOP basis	122413	103330	19083	180008	173482	6526
1.A.a.2 Net exports of goods under merchanting	99163	89394	9768	153648	158552	-4904
1.A.a.3 Nonmonetary gold	52210	63200	-10990	97432	128148	-30716
<b>1.A.b Services (1.A.b.1 to 1.A.b.13)</b>						
1.A.b.1 Manufacturing services on physical inputs owned by others	52073	62512	-10439	97353	120259	-22906
1.A.b.2 Maintenance and repair services n.i.e.	137	0	137	79	0	79
1.A.b.3 Transport						
1.A.b.4 Travel	4805	4216	588	6732	6616	116
1.A.b.5 Construction	1868	2766	-897	1597	2885	-1289
1.A.b.6 Insurance and pension services	659	625	34	583	892	-309
1.A.b.7 Financial services	564	378	186	772	428	344
1.A.b.8 Charges for the use of intellectual property n.i.e.	1009	1062	-52	1201	1118	83
1.A.b.9 Telecommunications, computer, and information services	399	1847	-1448	191	1972	-1781
1.A.b.10 Other business services	23396	2269	21127	28489	3017	25473
1.A.b.11 Personal, cultural, and recreational services	11282	11514	-232	12962	11635	1327
1.A.b.12 Government goods and services n.i.e.	500	347	153	647	804	-157
1.A.b.13 Others n.i.e.	148	330	-182	203	236	-32
<b>1.A.b.13 Others n.i.e.</b>	2212	705	1507	2698	665	2033
<b>1.B Primary Income (1.B.1 to 1.B.3)</b>						
<b>1.B.1 Compensation of employees</b>	<b>5027</b>	<b>12712</b>	<b>-7685</b>	<b>5445</b>	<b>12980</b>	<b>-7536</b>
<b>1.B.2 Investment income</b>						
1.B.2.1 Direct investment	1364	669	695	1601	711	890
1.B.2.2 Portfolio investment	3054	11861	-8807	2877	12009	-9132
1.B.2.3 Other investment	1306	7361	-6055	1425	7195	-5770
1.B.2.4 Reserve assets	24	1222	-1198	143	1852	-1709
<b>1.B.3 Other primary income</b>	66	3273	-3207	45	2961	-2916
<b>1.C Secondary Income (1.C.1+1.C.2)</b>						
<b>1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs</b>						
1.C.1.1 Personal transfers (Current transfers between resident and/	18196	979	17217	20894	1672	19222
1.C.1.2 Other current transfers	17596	739	16857	20074	1183	18891
1.C.2 General government	600	240	360	820	489	331
<b>2 Capital Account (2.1+2.2)</b>						
<b>2.1 Gross acquisitions (DR.)/disposals (CR.) of non-produced nonfinancial assets</b>						
2.1.1 Current transfers	91	872	-782	116	177	-62
2.2 Capital transfers	5	790	-786	7	56	-49
<b>2.2 Capital transfers</b>	86	82	4	109	121	-13
<b>3 Financial Account (3.1 to 3.5)</b>						
<b>3.1 Direct Investment (3.1A+3.1B)</b>						
<b>3.1.A Direct Investment in India</b>	<b>18223</b>	<b>1223</b>	<b>16999</b>	<b>20916</b>	<b>1950</b>	<b>18966</b>
<b>3.1.A.1 Equity and investment fund shares</b>						
3.1.A.1.1 Equity other than reinvestment of earnings	18196	979	17217	20894	1672	19222
3.1.A.1.2 Reinvestment of earnings	10805	9725	1081	22157	5818	16339
<b>3.1.A.2 Debt instruments</b>						
3.1.A.2.1 Direct investor in direct investment enterprises	6897	9725	-2828	17902	5818	12084
3.1.A.2.2 Reserve assets	3908	3908	4255	4255	4255	
<b>3.1.B Direct Investment by India</b>						
3.1.B.1 Equity and investment fund shares	1035	10	1025	928	92	837
3.1.B.1.1 Equity other than reinvestment of earnings	1035	10	1025	928	92	837
3.1.B.1.2 Reinvestment of earnings	144	2778	-2633	542	5821	-5279
3.1.B.2 Debt instruments	144	1988	-1844	542	3141	-2599
<b>3.1.B.2.1 Direct investor in direct investment enterprises</b>	144	1235	-1091	542	2381	-1839
<b>3.1.B.2.2 Reserve assets</b>	0	753	-753	760	760	-760
<b>3.2 Portfolio Investment</b>						
<b>3.2.A Portfolio Investment in India</b>						
<b>3.2.A.1 Equity and investment fund shares</b>	<b>62514</b>	<b>61872</b>	<b>642</b>	<b>79036</b>	<b>78634</b>	<b>402</b>
<b>3.2.A.1.1 Equity other than reinvestment of earnings</b>						
3.2.A.1.1.1 Equity other than reinvestment of earnings	61869	60772	1098	77499	77121	378
3.2.A.1.1.2 Reinvestment of earnings	52749	48334	4414	69769	68832	937
<b>3.2.A.1.2 Debt instruments</b>						
3.2.A.1.2.1 Direct investment enterprises	9121	12437	-3317	7730	8289	-559
<b>3.2.A.1.2.2 Reserve assets</b>						
3.2.A.1.2.2.1 Direct investment enterprises	644	1100	-456	1537	1513	24
<b>3.2.B Portfolio Investment by India</b>						
<b>3.2.B.1 Equity and investment fund shares</b>						
<b>3.2.B.1.1 Equity other than reinvestment of earnings</b>	<b>3421</b>	<b>3805</b>	<b>-385</b>	<b>3544</b>	<b>4841</b>	<b>-1297</b>
<b>3.2.B.1.1.1 Equity other than reinvestment of earnings</b>						
3.2.B.1.1.1.1 Equity other than reinvestment of earnings	42142	39740	2403	48970	34174	14797
<b>3.2.B.1.1.2 Reinvestment of earnings</b>						
3.2.B.1.1.2.1 Direct investment enterprises	0	0	0	0	0	0
<b>3.2.B.1.2 Debt instruments</b>						
3.2.B.1.2.1 Direct investment enterprises	0	0	0	0	0	0
<b>3.2.B.2 Reserve assets</b>						
<b>3.2.B.2.1 Direct investment enterprises</b>						
<b>3.2.B.2.1.1 Equity and investment fund shares</b>						
3.2.B.2.1.1.1 Equity other than reinvestment of earnings	16873	13924	2949	14562	11782	2781
3.2.B.2.1.1.2 Reinvestment of earnings	16422	12901	3521	13812	11458	2353
<b>3.2.B.2.1.2 Debt instruments</b>						
3.2.B.2.1.2.1 Direct investment enterprises	451	1023	-573	750	323	427
<b>3.2.B.2.2 Reserve assets</b>						
3.2.B.2.2.1 Direct investment enterprises	40	47	-7	32	63	-30
<b>3.2.B.3 Other financial assets and liabilities</b>						
<b>3.2.B.3.1 Equity and investment fund shares</b>						
3.2.B.3.1.1 Equity other than reinvestment of earnings	9017	9213	-196	11303	9366	1937
3.2.B.3.1.2 Reinvestment of earnings	5560	8135	-2575	11862	4253	7609
<b>3.2.B.3.2 Debt instruments</b>						
<b>3.2.B.3.3 Reserve assets</b>						
<b>3.2.B.3.4 Other financial assets and liabilities</b>						
<b>3.2.B.3.5 Special drawing rights</b>						
<b>3.2.B.3.6 Other financial assets and liabilities</b>						
<b>3.2.C Reserve assets</b>						
<b>3.2.C.1 Monetary gold</b>						
<b>3.2.C.2 Special drawing rights n.a.</b>						
<b>3.2.C.3 Reserve position in the IMF n.a.</b>						
<b>3.2.C.4 Other reserve assets (Foreign Currency Assets)</b>						
<b>3.2.C.4.1 Equity and investment fund shares</b>						
3.2.C.4.1.1 Equity other than reinvestment of earnings	0	19846	-19846	0	31870	-31870
3.2.C.4.1.2 Reinvestment of earnings	67803	65000	2803	97582	84208	13374
<b>3.2.C.4.2 Debt instruments</b>						
<b>3.2.C.4.3 Reserve assets</b>						
<b>3.2.C.4.4 Other financial assets and liabilities</b>						
<b>3.2.C.4.5 Special drawing rights</b>						
<b>3.2.C.4.6 Other financial assets and liabilities</b>						
<b>3.2.D Net errors and omissions</b>						
<b>3.2.D.1 Current account balance</b>						
<b>3.2.D.2 Capital account balance</b>						
<b>3.2.D.3 Financial account balance</b>						
<b>3.2.D.4 Portfolio investment balance</b>						
<b>3.2.D.5 Reserve assets balance</b>						
<b>3.2.D.6 Net errors and omissions</b>						
<b>3.2.D.7 Total balance</b>						
<b>3.2.D.8 Preliminary balance</b>						
<b>3.2.D.9 Final balance</b>						
<b>3.2.D.10 Final balance (P)</b>						
<b>3.2.D.11 Final balance (F)</b>						
<b>3.2.D.12 Final balance (P+F)</b>						
<b>3.2.D.13 Final balance (P+F)</b>						
<b>3.2.D.14 Final balance (P+F)</b>						
<b>3.2.D.15 Final balance (P+F)</b>						
<b>3.2.D.16 Final balance (P+F)</b>						
<b>3.2.D.17 Final balance (P+F)</b>						
<b>3.2.D.18 Final balance (P+F)</b>						
<b>3.2.D.19 Final balance (P+F)</b>						
<b>3.2.D.20 Final balance (P+F)</b>						
<b>3.2.D.21 Final balance (P+F)</b>						
<b>3.2.D.22 Final balance (P+F)</b>						
<b>3.2.D.23 Final balance (P+F)</b>						
<b>3.2.D.24 Final balance (P+F)</b>						
<b>3.2.D.25 Final balance (P+F)</b>						
<b>3.2.D.26 Final balance (P+F)</b>						
<b>3.2.D.27 Final balance (P+F)</b>						
<b>3.2.D.28 Final balance (P+F)</b>						
<b>3.2.D.29 Final balance (P+F)</b>						
<b>3.2.D.30 Final balance (P+F)</b>						
<b>3.2.D.31 Final balance (P+F)</b>						
<b>3.2.D.32 Final balance (P+F)</b>						
<b>3.2.D.33 Final balance (P+F)</b>						
<b>3.2.D.34 Final balance (P+F)</b>						
<b>3.2.D.35 Final balance (P+F)</b>						
<b>3.2.D.36 Final balance (P+F)</b>						
<b>3.2.D.37 Final balance (P+F)</b>						
<b>3.2.D.38 Final balance (P+F)</b>						
<b>3.2.D.39 Final balance (P+F)</b>						
<b>3.2.D.40 Final balance (P+F)</b>						
<b>3.2.D.41 Final balance (P+F)</b>						
<b>3.2.D.42 Final balance (P+F)</b>						
<b>3.2.D.43 Final balance (P+F)</b>						
<b>3.2.D.44 Final balance (P+F)</b>						
<b>3.2.D.45 Final balance (P+F)</b>						
<b>3.2.D.46 Final balance (P+F)</b>						
<b>3.2.D.47 Final balance (P+F)</b>						
<b>3.2.D.48 Final balance (P+F)</b>						
<b>3.2.D.49 Final balance (P+F)</b>						
<b>3.2.D.50 Final balance (P+F)</b>						
<b>3.2.D.51 Final balance (P+F)</b>						
<b>3.2.D.52 Final balance (P+F)</b>						
<b>3.2.D.53 Final balance (P+F)</b>						
<b>3.2.D.54 Final balance (P+F)</b>						
<b>3.2.D.55 Final balance (P+F)</b>						
<b>3.2.D.56 Final balance (P+F)</b>						
<b>3.2.D.57 Final balance (P+F)</b>						
<b>3.2.D.58 Final balance (P+F)</b>						
<b>3.2.D.59 Final balance (P+F)</b>						
<b>3.2.D.60 Final balance (P+F)</b>						
<b>3.2.D.61 Final balance (P+F)</b>						
<b>3.2.D.62 Final balance (P+F)</b>						
<b>3.2.D.63 Final balance (P+F)</b>						
<b>3.2.D.64 Final balance (P+F)</b>						
<b>3.2.D.65 Final balance (P+F)</b>						

## No. 41: Standard Presentation of BoP in India as per BPM6

Item	(₹ Crore)					
	Apr-Jun 2020			Apr-Jun 2021(P)		
	Credit	Debit	Net	Credit	Debit	Net
1	2	3	4	5	6	
<b>1 Current Account (1.A+1.B+1.C)</b>						
<b>1.A Goods and Services (1.A.a+1.A.b)</b>						
<b>1.A.a Goods (1.A.a.1 to 1.A.a.3)</b>						
1.A.a.1 General merchandise on a BOP basis	928798	784007	144791	1327850	1279707	48143
1.A.a.2 Net exports of goods under merchanting	752391	678274	74117	1133399	1169574	-36175
1.A.a.3 Nonmonetary gold	396138	479523	-83385	718715	945294	-226579
<b>1.A.b Services (1.A.b.1 to 1.A.b.13)</b>	395100	474304	-79205	718135	887106	-168971
1.A.b.1 Manufacturing services on physical inputs owned by others	1038	0	1038	580	0	580
1.A.b.2 Maintenance and repair services n.i.e.	0	5219	-5219	58188	58188	-58188
1.A.b.3 Transport	356253	198750	157503	414684	224280	190404
1.A.b.4 Travel	588	45	542	610	68	542
1.A.b.5 Construction	241	975	-733	424	938	-514
1.A.b.6 Insurance and pension services	36457	31992	4465	49660	48803	857
1.A.b.7 Financial services	14176	20984	-6808	11778	21283	-9505
1.A.b.8 Charges for the use of intellectual property n.i.e.	5003	4743	260	4303	6581	-2278
1.A.b.9 Telecommunications, computer, and information services	7659	8056	-396	8856	8247	609
1.A.b.10 Other business services	3026	14016	-10990	1412	14547	-13135
1.A.b.11 Personal, cultural, and recreational services	177514	17215	160300	210155	22252	187903
1.A.b.12 Government goods and services n.i.e.	85604	87365	-1762	95612	85825	9787
1.A.b.13 Others n.i.e.	3792	2632	1160	4776	5933	-1157
<b>1.B Primary Income (1.B.1 to 1.B.3)</b>	1123	2504	-1381	1500	1739	-239
1.B.1 Compensation of employees	16787	5352	11435	19901	4903	14998
1.B.2 Investment income	38144	96452	-58308	40163	95750	-55588
1.B.2.1 Direct investment	10347	5077	5270	11812	5244	6568
1.B.2.2 Portfolio investment	23171	89993	-66822	21224	88588	-67364
1.B.2.3 Other investment	9912	55855	-45943	10515	53077	-42562
1.B.2.4 Reserve assets	185	9273	-9088	1051	13662	-12610
1.B.3 Other primary income	500	24831	-24332	336	21843	-21508
<b>1.C Secondary Income (1.C.1+1.C.2)</b>	12574	34	12540	9322	7	9315
1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs	4626	1382	3244	7127	1918	5209
1.C.1.1 Personal transfers (Current transfers between resident and/	138262	9280	128982	154289	14383	139906
1.C.1.2 Other current transfers	133511	5606	127905	148076	8724	139352
1.C.2 General government	4553	1822	2731	6049	3608	2441
<b>2 Capital Account (2.1+2.2)</b>	199	1852	-1654	164	2051	-1887
<b>2.1 Gross acquisitions (DR.)/disposals (CR.) of non-produced nonfinancial assets</b>	<b>690</b>	<b>6620</b>	<b>-5930</b>	<b>854</b>	<b>1309</b>	<b>-455</b>
<b>2.2 Capital transfers</b>	34	5996	-5961	51	413	-363
<b>3 Financial Account (3.1 to 3.5)</b>	656	624	32	803	895	-93
<b>3.1 Direct Investment (3.1A+3.1B)</b>	<b>910956</b>	<b>1045362</b>	<b>-134406</b>	<b>1144692</b>	<b>1189480</b>	<b>-44788</b>
<b>3.1.A Direct Investment in India</b>	<b>90933</b>	<b>94938</b>	<b>-4006</b>	<b>174292</b>	<b>86537</b>	<b>87755</b>
3.1.A.1 Equity and investment fund shares	89839	73864	15975	170293	43594	126698
3.1.A.1.1 Equity other than reinvestment of earnings	81986	73787	8199	163445	42917	120527
3.1.A.1.2 Reinvestment of earnings	52333	73787	-21454	132055	42917	89137
3.1.A.2 Debt instruments	29652	0	29652	31390	0	31390
3.1.A.2.1 Direct investor in direct investment enterprises	7853	77	7776	6848	677	6171
3.1.B Direct Investment by India	7853	77	7776	6848	677	6171
3.1.B.1 Equity and investment fund shares	1094	21074	-19981	3999	42943	-38944
3.1.B.1.1 Equity other than reinvestment of earnings	1094	15087	-13993	3999	23167	-19168
3.1.B.1.2 Reinvestment of earnings	1094	9372	-8278	3999	17565	-13566
3.1.B.2 Debt instruments	0	5715	-5715	0	5603	-5603
3.1.B.2.1 Direct investor in direct investment enterprises	0	5987	-5987	0	19776	-19776
<b>3.2 Portfolio Investment</b>	<b>474318</b>	<b>469449</b>	<b>4869</b>	<b>583021</b>	<b>580055</b>	<b>2966</b>
<b>3.2.A Portfolio Investment in India</b>	<b>469430</b>	<b>461102</b>	<b>8328</b>	<b>571680</b>	<b>568891</b>	<b>2789</b>
3.2.1 Equity and investment fund shares	400227	366734	33493	514658	507747	6911
3.2.2 Debt securities	69203	94368	-25165	57022	61143	-4121
<b>3.2.B Portfolio Investment by India</b>	<b>4888</b>	<b>8347</b>	<b>-3459</b>	<b>11341</b>	<b>11164</b>	<b>177</b>
<b>3.3 Financial derivatives (other than reserves) and employee stock options</b>	<b>25953</b>	<b>28871</b>	<b>-2918</b>	<b>26144</b>	<b>35709</b>	<b>-9565</b>
<b>3.4 Other investment</b>	<b>319753</b>	<b>301522</b>	<b>18232</b>	<b>361235</b>	<b>252085</b>	<b>109150</b>
3.4.1 Other equity (ADRs/GDRs)	0	0	0	0	0	0
3.4.2 Currency and deposits	80826	63886	16940	82703	64257	18447
3.4.2.1 Central bank (Rupee Debt Movements; NRG)	0	5823	-5823	0	182	-182
3.4.2.2 Deposit-taking corporations, except the central bank (NRI Deposits)	80826	58063	22763	82703	64074	18629
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)	128022	105649	22373	107420	86908	20512
3.4.3.A Loans to India	124601	97884	26717	101884	84524	17361
3.4.3.B Loans by India	3421	7765	-4344	5536	2384	3151
3.4.4 Insurance, pension, and standardized guarantee schemes	306	358	-53	238	462	-224
3.4.5 Trade credit and advances	68416	69904	-1488	83375	69088	14287
3.4.6 Other accounts receivable/payable - other	42183	61725	-19541	87499	31370	56128
3.4.7 Special drawing rights	0	0	0	0	0	0
<b>3.5 Reserve assets</b>	<b>0</b>	<b>150582</b>	<b>-150582</b>	<b>0</b>	<b>235094</b>	<b>-235094</b>
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	150582	-150582	0	235094	-235094
<b>4 Total assets/liabilities</b>	<b>910956</b>	<b>1045362</b>	<b>-134406</b>	<b>1144692</b>	<b>1189480</b>	<b>-44788</b>
4.1 Equity and investment fund shares	514453	493185	21268	719825	621168	98657
4.2 Debt instruments	354320	339871	14449	337369	301848	35520
4.3 Other financial assets and liabilities	42183	212307	-170123	87499	266464	-178966
<b>5 Net errors and omissions</b>	<b>0</b>	<b>4456</b>	<b>-4456</b>	<b>2900</b>	<b>-2900</b>	<b>-2900</b>

Note : P: Preliminary

**No. 42: International Investment Position**

(US\$ Million)

Item	As on Financial Year /Quarter End							
	2020-21		2020		2021			
			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	193929	482179	185590	419385	193929	482179	199208	493691
1.1 Equity Capital and Reinvested Earnings	122726	456947	120286	395773	122726	456947	125324	467991
1.2 Other Capital	71203	25232	65304	23612	71203	25232	73884	25700
2 Portfolio Investment	7936	281961	4303	241620	7936	281961	7912	281267
2.1 Equity	2340	177278	830	138961	2340	177278	3146	176203
2.2 Debt	5596	104682	3474	102659	5596	104682	4766	105064
3 Other Investment	80606	446473	53558	432739	80606	446473	76911	447153
3.1 Trade Credit	5644	100337	1145	103998	5644	100337	7861	102193
3.2 Loan	13335	189993	7425	184813	13335	189993	13661	189520
3.3 Currency and Deposits	42436	142069	27741	132942	42436	142069	35904	141873
3.4 Other Assets/Liabilities	19191	14074	17247	10987	19191	14074	19485	13567
4 Reserves	576984		505702		576984		611075	
5 Total Assets/ Liabilities	859454	1210613	749153	1093744	859454	1210613	895106	1222111
<b>6 IIP (Assets - Liabilities)</b>		-351158		-344591		-351158		-327005

# Payment and Settlement Systems

## No.43: Payment System Indicators

### PART I - Payment System Indicators - Payment & Settlement System Statistics

System	Volume (Lakh )				Value (₹ Crore)			
	FY 2020-21	2020	2021		FY 2020-21	2020	2021	
		Aug.	Jul.	Aug.		Aug.	Jul.	Aug.
1	2	3	4	5	6	7	8	
<b>A. Settlement Systems</b>								
<b>Financial Market Infrastructures (FMIs)</b>								
<b>1 CCIL Operated Systems (1.1 to 1.3)</b>	27.97	2.28	2.68	2.51	161943141	12576300	16798812	15362952
1.1 Govt. Securities Clearing (1.1.1 to 1.1.3)	11.55	0.96	0.98	0.96	110634315	8614891	11096031	10388877
1.1.1 Outright	6.28	0.52	0.50	0.50	10032187	867395	744621	730532
1.1.2 Repo	2.84	0.27	0.25	0.24	43751173	3793333	3802644	3479766
1.1.3 Tri-party Repo	2.43	0.18	0.24	0.22	56850956	3954162	6548766	6178579
1.2 Forex Clearing	16.04	1.28	1.64	1.48	48903961	3749569	5290626	4599545
1.3 Rupee Derivatives @	0.38	0.03	0.07	0.06	2404865	211840	412155	374530
<b>B. Payment Systems</b>								
<b>I Financial Market Infrastructures (FMIs)</b>								
<b>1 Credit Transfers - RTGS (1.1 to 1.2)</b>	1591.92	116.77	167.65	166.52	105599849	7292380	10741314	10164296
1.1 Customer Transactions	1573.47	115.29	166.43	165.34	91008367	6382552	9288984	8940380
1.2 Interbank Transactions	18.45	1.49	1.22	1.18	14591482	909828	1452331	1223916
<b>II Retail</b>								
<b>2 Credit Transfers - Retail (2.1 to 2.6)</b>	317851.82	23968.09	41367.43	45370.66	33522150	2556825	3214817	3277624
2.1 AePS (Fund Transfers) @	11.32	0.89	1.03	1.05	623	46	61	61
2.2 APBS \$	14372.99	1196.39	1045.01	722.32	112747	8313	7952	10305
2.3 IMPS	32783.47	2461.25	3524.64	3797.12	2941500	235137	311310	320203
2.4 NACH Cr \$	16449.51	1775.18	1171.72	2075.99	1232714	84468	85307	98119
2.5 NEFT	30927.89	2346.09	3170.00	3218.73	25130910	1930552	2204303	2209818
2.6 UPI @	223306.64	16188.28	32455.02	35555.45	4103658	298308	605883	639117
2.6.1 of which USSD @	10.45	0.92	1.08	1.14	172	15	16	17
<b>3 Debit Transfers and Direct Debits (3.1 to 3.3)</b>	10440.40	857.28	986.32	1008.32	872399	67146	86503	85436
3.1 BHIM Aadhaar Pay @	160.84	19.50	17.49	21.99	2580	253	414	462
3.2 NACH Dr \$	9629.61	791.81	877.08	876.81	868906	66830	85980	84818
3.3 NETC (linked to bank account) @	649.96	45.96	91.75	109.52	913	63	109	155
<b>4 Card Payments (4.1 to 4.2)</b>	57786.60	4814.53	5225.86	5493.00	1291799	105081	135972	142600
4.1 Credit Cards (4.1.1 to 4.1.2)	17641.06	1425.11	1820.49	1904.71	630414	50311	74885	77733
4.1.1 PoS based \$	8688.81	659.47	900.27	984.62	280769	21001	30498	32969
4.1.2 Others \$	8952.25	765.64	920.21	920.08	349645	29310	44387	44764
4.2 Debit Cards (4.2.1 to 4.2.1)	40145.54	3389.42	3405.37	3588.29	661385	54770	61087	64867
4.2.1 PoS based \$	20773.50	1647.47	1901.64	2119.63	377630	29525	36764	41177
4.2.2 Others \$	19372.04	1741.95	1503.73	1468.66	283755	25245	24324	23690
<b>5 Prepaid Payment Instruments (5.1 to 5.2)</b>	49392.29	4932.61	4959.07	5185.79	197696	16808	20806	22631
5.1 Wallets	39987.01	3967.82	4079.19	4201.24	152065	13000	17053	17712
<b>5.2 Cards (5.2.1 to 5.2.2)</b>	9405.28	964.79	879.89	984.54	45631	3808	3753	4919
5.2.1 PoS based \$	437.33	29.20	63.24	83.94	11639	737	683	1104
5.2.2 Others \$	8967.95	935.59	816.64	900.60	33992	3072	3070	3815
<b>6 Paper-based Instruments (6.1 to 6.2)</b>	6703.70	519.83	596.11	588.62	5627189	425462	553256	533903
6.1 CTS (NPCI Managed)	6702.53	519.72	596.11	588.62	5625941	425252	553256	533903
6.2 Others	1.17	0.11	—	—	1249	210	—	—
<b>Total - Retail Payments (2+3+4+5+6)</b>	442174.81	35092.34	53134.79	57646.38	41511233	3171322	4011354	4062192
<b>Total Payments (1+2+3+4+5+6)</b>	443766.73	35209.11	53302.44	57812.90	147111082	10463702	14752668	14226488
<b>Total Digital Payments (1+2+3+4+5)</b>	437063.03	34689.28	52706.33	57224.28	141483892	10038240	14199411	13692586

**PART II - Payment Modes and Channels**

System	Volume (Lakh )				Value (₹ Crore)					
	FY 2020-21	2020		2021		FY 2020-21	2020		2021	
		Aug.	Jul.	Aug.	Aug.		Aug.	Jul.	Aug.	
	1	2	3	4	5	6	7	8		
<b>A. Other Payment Channels</b>										
<b>1 Mobile Payments (mobile app based) (1.1 to 1.2)</b>	258033.70	19962.77	37458.94	39030.52	9201212	678278	1149340	1136546		
1.1 Intra-bank \$	25220.71	1736.72	3134.21	3244.31	1871390	140148	210636	201775		
1.2 Inter-bank \$	232812.99	18226.05	34324.73	35786.20	7329822	538130	938704	934771		
<b>2 Internet Payments (Netbanking / Internet Browser Based) @ (2.1 to 2.2)</b>	32493.63	2651.34	3048.81	3134.32	41581497	3006656	3710473	3688425		
2.1 Intra-bank @	6886.15	557.18	606.23	603.29	20601554	1494618	1625684	1636328		
2.2 Inter-bank @	25607.48	2094.17	2442.58	2531.03	20979943	1512038	2084788	2052097		
<b>B. ATMs</b>										
<b>3 Cash Withdrawal at ATMs \$ (3.1 to 3.3)</b>	60905.81	4862.15	5378.72	5688.70	2889826	236446	254880	262881		
3.1 Using Credit Cards \$	51.41	3.66	4.74	5.02	2560	184	235	248		
3.2 Using Debit Cards \$	60602.23	4837.94	5348.70	5656.34	2878025	235550	253780	261683		
3.3 Using Pre-paid Cards \$	252.17	20.55	25.28	27.34	9240	713	865	950		
<b>4 Cash Withdrawal at PoS \$ (4.1 to 4.2)</b>	394.77	32.48	7.45	6.62	1533	134	62	70		
4.1 Using Debit Cards \$	353.50	27.89	6.15	5.50	1484	129	43	42		
4.2 Using Pre-paid Cards \$	41.27	4.60	1.30	1.12	49	5	19	28		
<b>5 Cash Withdrawal at Micro ATMs @</b>	9460.43	814.30	869.89	1061.82	225420	19513	22973	26830		
5.1 AePS @	9460.43	814.30	869.89	1061.82	225420	19513	22973	26830		

**PART III - Payment Infrastructures (Lakh)**

System	As on March 2021	2020		2021			
		Aug.	Jul.	Aug.			
				1	2		
<b>Payment System Infrastructures</b>							
<b>1 Number of Cards (1.1 to 1.2)</b>	9602.51	9132.03	9694.51	9777.46			
1.1 Credit Cards	620.49	578.31	634.14	639.34			
1.2 Debit Cards	8982.02	8553.73	9060.36	9138.11			
<b>2 Number of PPIs @ (2.1 to 2.2)</b>	21952.60	20134.06	23388.31	23850.19			
2.1 Wallets @	20052.10	18482.49	21244.36	21645.16			
2.2 Cards @	1900.51	1651.58	2143.95	2205.02			
<b>3 Number of ATMs (3.1 to 3.2)</b>	2.39	2.33	2.40	2.41			
3.1 Bank owned ATMs \$	2.14	2.09	2.13	2.14			
3.2 White Label ATMs \$	0.25	0.24	0.27	0.27			
<b>4 Number of Micro ATMs @</b>	4.04	3.07	4.75	4.94			
<b>5 Number of PoS Terminals</b>	47.20	43.55	46.08	47.48			
<b>6 Bharat QR @</b>	35.70	22.99	51.24	52.69			
<b>7 UPI QR *</b>	925.22	—	1070.08	1092.04			

@: New inclusion w.e.f. November 2019

\$ : 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.

# Occasional Series

## No. 44: Small Savings

(₹ Crore)

Scheme		2019-20	2020		2021			
			Feb.	Dec.	Jan.	Feb.		
			1	2	3	4	5	
<b>1 Small Savings</b>			<b>Receipts</b>	<b>159573</b>	<b>16911</b>	<b>16781</b>	<b>14261</b>	<b>14405</b>
			<b>Outstanding</b>	<b>1078535</b>	<b>1046766</b>	<b>1196084</b>	<b>1210379</b>	<b>1224772</b>
<b>1.1 Total Deposits</b>			<b>Receipts</b>	<b>116389</b>	<b>11460</b>	<b>12407</b>	<b>9820</b>	<b>10143</b>
1.1.1 Post Office Saving Bank Deposits			<b>Outstanding</b>	<b>734807</b>	<b>716363</b>	<b>827156</b>	<b>836976</b>	<b>847119</b>
1.1.2 MGNREG			Receipts	25893	2690	3307	2049	2252
			Outstanding	166140	156258	190437	192486	194738
1.1.3 National Saving Scheme, 1987			Receipts					
			Outstanding	36	-20	-21	-26	-23
1.1.4 National Saving Scheme, 1992			Receipts	3143	2939	3086	3060	3037
			Outstanding	-1	-3	-3	0	57
1.1.5 Monthly Income Scheme			Receipts	9	-23	-17	-17	40
			Outstanding	16510	1887	1053	1162	1135
1.1.6 Senior Citizen Scheme 2004			Receipts	209168	207059	217980	219142	220277
			Outstanding	20334	2131	2014	1886	1950
1.1.7 Post Office Time Deposits			Receipts	76042	73728	90914	92800	94750
			Outstanding	41795	4494	4330	3952	3798
1.1.7.1 1 year Time Deposits			Receipts	166087	161115	195847	199799	203597
1.1.7.2 2 year Time Deposits			Outstanding	92618	90327	104601	105928	107099
1.1.7.3 3 year Time Deposits			Receipts	7097	6970	7324	7375	7418
1.1.7.4 5 year Time Deposits			Outstanding	7536	7464	7330	7285	7267
1.1.8 Post Office Recurring Deposits			Receipts	58836	56354	76592	79211	81813
			Outstanding	11821	281	1727	797	974
1.1.9 Post Office Cumulative Time Deposits			Receipts	114222	115291	128912	129709	130683
			Outstanding	1	0	0	0	0
1.1.10 Other Deposits			Receipts	-25	-25	-24	-24	-24
			Outstanding	0	0	0	0	0
			Receipts	21	21	21	21	21
<b>1.2 Saving Certificates</b>			<b>Receipts</b>	<b>30170</b>	<b>3937</b>	<b>3941</b>	<b>3909</b>	<b>3647</b>
			<b>Outstanding</b>	<b>252190</b>	<b>248022</b>	<b>274905</b>	<b>278848</b>	<b>282483</b>
1.2.1 National Savings Certificate VIII issue			Receipts	19495	2619	1923	1903	1843
			Outstanding	117987	115127	129270	131173	133016
1.2.2 Indira Vikas Patras			Receipts	-101	1	-1	-1	0
			Outstanding	162	-288	158	157	157
1.2.3 Kisan Vikas Patras			Receipts	-18168	-1120	-669	-603	-470
			Outstanding	1135	3949	-5121	-5724	-6194
1.2.4 Kisan Vikas Patras - 2014			Receipts	28972	2452	2677	2610	2274
			Outstanding	122602	118507	140538	143148	145422
1.2.5 National Saving Certificate VI issue			Receipts	-4	0	8	0	0
			Outstanding	-155	-180	-147	-147	-147
1.2.6 National Saving Certificate VII issue			Receipts	-24	-15	3	0	0
			Outstanding	-106	-99	-103	-103	-103
1.2.7 Other Certificates			Outstanding	10565	11006	10310	10344	10332
<b>1.3 Public Provident Fund</b>			<b>Receipts</b>	<b>13014</b>	<b>1514</b>	<b>433</b>	<b>532</b>	<b>615</b>
			<b>Outstanding</b>	<b>91538</b>	<b>82381</b>	<b>94023</b>	<b>94555</b>	<b>95170</b>

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				
	2020			2021	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
<b>(A) Total (in ₹. Crore)</b>	<b>6704983</b>	<b>7137069</b>	<b>7357111</b>	<b>7635902</b>	<b>7882533</b>
1 Commercial Banks	38.98	38.55	37.81	37.77	35.99
2 Non-Bank PDs	0.36	0.34	0.25	0.27	0.34
3 Insurance Companies	26.24	25.33	25.64	25.30	25.83
4 Mutual Funds	2.02	2.42	2.62	2.94	2.82
5 Co-operative Banks	1.86	1.86	1.83	1.82	1.82
6 Financial Institutions	1.19	1.42	1.00	1.00	1.43
7 Corporates	0.78	0.94	1.05	1.06	1.39
8 Foreign Portfolio Investors	1.79	2.05	2.10	1.87	1.79
9 Provident Funds	4.96	4.77	4.61	4.44	4.04
10 RBI	14.70	15.00	15.71	16.20	17.11
11. Others	7.11	7.32	7.37	7.33	7.43
11.1 State Governments	1.99	1.86	1.76	1.69	1.67

Category	State Governments Securities				
	2020			2021	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
<b>(B) Total (in ₹. Crore)</b>	<b>3393099</b>	<b>3564979</b>	<b>3721573</b>	<b>3879982</b>	<b>4028849</b>
1 Commercial Banks	33.54	34.60	34.19	33.69	33.75
2 Non-Bank PDs	0.74	0.54	0.36	0.48	0.39
3 Insurance Companies	30.85	30.26	30.25	30.04	29.67
4 Mutual Funds	1.74	1.96	1.92	1.82	1.74
5 Co-operative Banks	4.38	4.19	4.11	4.05	4.12
6 Financial Institutions	1.96	1.92	1.88	1.86	1.79
7 Corporates	0.31	0.39	0.45	0.49	1.45
8 Foreign Portfolio Investors	0.02	0.02	0.02	0.02	0.02
9 Provident Funds	21.70	21.31	21.20	22.00	21.09
10 RBI	0.00	0.00	0.81	0.77	0.88
11. Others	4.78	4.80	4.82	4.77	5.10
11.1 State Governments	0.18	0.18	0.18	0.18	0.18

Category	Treasury Bills				
	2020			2021	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
<b>(C) Total (in ₹. Crore)</b>	<b>881362</b>	<b>982286</b>	<b>839729</b>	<b>690646</b>	<b>901327</b>
1 Commercial Banks	46.11	53.50	54.75	55.54	52.25
2 Non-Bank PDs	1.48	2.16	1.65	2.82	1.82
3 Insurance Companies	4.64	4.06	4.50	5.61	4.75
4 Mutual Funds	23.45	19.90	18.98	17.80	19.93
5 Co-operative Banks	1.95	1.63	1.61	2.43	1.60
6 Financial Institutions	1.67	1.34	1.11	1.24	2.56
7 Corporates	1.43	1.63	2.01	3.16	3.00
8 Foreign Portfolio Investors	0.00	0.00	0.00	0.00	0.00
9 Provident Funds	0.05	0.00	0.09	0.22	0.10
10 RBI	11.27	4.80	0.68	0.49	2.58
11. Others	7.95	10.99	14.63	10.70	11.42
11.1 State Governments	4.35	7.76	13.27	5.98	7.97

**No. 46: Combined Receipts and Disbursements of the Central and State Governments**

(₹ Crore)

Item	2015-16	2016-17	2017-18	2018-19	2019-20 RE	2020-21 BE
	1	2	3	4	5	6
<b>1 Total Disbursements</b>	<b>3760611</b>	<b>4265969</b>	<b>4515946</b>	<b>5040747</b>	<b>5875914</b>	<b>6470254</b>
1.1 Developmental	2201287	2537905	2635110	2882758	3486519	3818358
1.1.1 Revenue	1668250	1878417	2029044	2224367	2708218	2920507
1.1.2 Capital	412069	501213	519356	596774	694262	794599
1.1.3 Loans	120968	158275	86710	61617	84038	103252
1.2 Non-Developmental	1510810	1672646	1812455	2078276	2295105	2556504
1.2.1 Revenue	1379727	1555239	1741432	1965907	2171963	2421566
1.2.1.1 Interest Payments	648091	724448	814757	894520	969344	1091617
1.2.2 Capital	127306	115775	69370	111029	121159	132961
1.2.3 Loans	3777	1632	1654	1340	1984	1977
1.3 Others	48514	55417	68381	79713	94290	95393
<b>2 Total Receipts</b>	<b>3778049</b>	<b>4288432</b>	<b>4528422</b>	<b>5023352</b>	<b>5779396</b>	<b>6524526</b>
2.1 Revenue Receipts	2748374	3132201	3376416	3797731	4338225	4828088
2.1.1 Tax Receipts	2297101	2622145	2978134	3278947	3547958	3951657
2.1.1.1 Taxes on commodities and services	1440952	1652377	1853859	2030050	2157126	2436871
2.1.1.2 Taxes on Income and Property	852271	965622	1121189	1246083	1386652	1510287
2.1.1.3 Taxes of Union Territories (Without Legislature)	3878	4146	3086	2814	4180	4500
2.1.2 Non-Tax Receipts	451272	510056	398282	518783	790267	876430
2.1.2.1 Interest Receipts	35779	33220	34224	36273	33272	30911
2.2 Non-debt Capital Receipts	59827	69063	142433	140287	129507	232172
2.2.1 Recovery of Loans & Advances	16561	20942	42213	44667	62499	18302
2.2.2 Disinvestment proceeds	43266	48122	100219	95621	67008	213870
<b>3 Gross Fiscal Deficit [ 1 - ( 2.1 + 2.2 ) ]</b>	<b>952410</b>	<b>1064704</b>	<b>997097</b>	<b>1102729</b>	<b>1408183</b>	<b>1409995</b>
<b>3A Sources of Financing: Institution-wise</b>						
3A.1 Domestic Financing	939662	1046708	989167	1097210	1403250	1405373
3A.1.1 Net Bank Credit to Government	231090	617123	144792	387091	518093	-----
3A.1.1.1 Net RBI Credit to Government	60472	195816	-144847	325987	190241	-----
3A.1.2 Non-Bank Credit to Government	708572	429585	844375	710119	885156	-----
3A.2 External Financing	12748	17997	7931	5519	4933	4622
<b>3B Sources of Financing: Instrument-wise</b>						
3B.1 Domestic Financing	939662	1046708	989167	1097210	1403250	1405373
3B.1.1 Market Borrowings (net)	673298	689821	794856	795845	962386	1105573
3B.1.2 Small Savings (net)	80015	35038	71222	88961	213430	213430
3B.1.3 State Provident Funds (net)	35261	45688	42351	51004	42900	42529
3B.1.4 Reserve Funds	-3322	-6436	18423	-18298	-241	2978
3B.1.5 Deposits and Advances	13470	17792	25138	66289	32949	35987
3B.1.6 Cash Balances	-17438	-22463	-12476	17395	96518	-54272
3B.1.7 Others	158378	287268	49653	96014	55309	59147
3B.2 External Financing	12748	17997	7931	5519	4933	4622
<b>4 Total Disbursements as per cent of GDP</b>	<b>27.3</b>	<b>27.7</b>	<b>26.4</b>	<b>26.6</b>	<b>28.9</b>	<b>28.8</b>
<b>5 Total Receipts as per cent of GDP</b>	<b>27.4</b>	<b>27.9</b>	<b>26.5</b>	<b>26.5</b>	<b>28.4</b>	<b>29.0</b>
<b>6 Revenue Receipts as per cent of GDP</b>	<b>20.0</b>	<b>20.3</b>	<b>19.7</b>	<b>20.0</b>	<b>21.3</b>	<b>21.5</b>
<b>7 Tax Receipts as per cent of GDP</b>	<b>16.7</b>	<b>17.0</b>	<b>17.4</b>	<b>17.3</b>	<b>17.4</b>	<b>17.6</b>
<b>8 Gross Fiscal Deficit as per cent of GDP</b>	<b>6.9</b>	<b>6.9</b>	<b>5.8</b>	<b>5.8</b>	<b>6.9</b>	<b>6.3</b>

...: Not available. RE: Revised Estimates; BE: Budget Estimates

Source : Budget Documents of Central and State Governments.

**No. 47: Financial Accommodation Availed by State Governments under various Facilities**

(₹ Crore)

Sr. No	State/Union Territory	During August-2021					
		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	
1	Andhra Pradesh	453	29	2001	26	936	18
2	Arunachal Pradesh	-	-	-	-	-	-
3	Assam	-	-	-	-	-	-
4	Bihar	-	-	-	-	-	-
5	Chhattisgarh	-	-	-	-	-	-
6	Goa	76	20	39	10	-	-
7	Gujarat	-	-	-	-	-	-
8	Haryana	-	-	405	4	-	-
9	Himachal Pradesh	-	-	88	10	-	-
10	Jammu & Kashmir UT	-	-	1154	27	405	19
11	Jharkhand	-	-	-	-	-	-
12	Karnataka	-	-	-	-	-	-
13	Kerala	96	25	1038	24	1197	1
14	Madhya Pradesh	-	-	-	-	-	-
15	Maharashtra	-	-	-	-	-	-
16	Manipur	-	-	287	31	233	20
17	Meghalaya	-	-	-	-	-	-
18	Mizoram	-	-	60	24	-	-
19	Nagaland	76	27	182	22	93	3
20	Odisha	-	-	-	-	-	-
21	Puducherry	-	-	-	-	-	-
22	Punjab	-	-	-	-	-	-
23	Rajasthan	1304	10	-	-	-	-
24	Tamil Nadu	-	-	-	-	-	-
25	Telangana	553	21	639	18	156	1
26	Tripura	-	-	-	-	-	-
27	Uttar Pradesh	-	-	-	-	-	-
28	Uttarakhand	-	-	-	-	-	-
29	West Bengal	193	1	-	-	-	-

**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. 48: Investments by State Governments**

(₹ Crore)

Sr. No	State/Union Territory	As on end of August 2021			
		Consolidated Sinking Fund (CSF)	Guarantee Redemption Fund (GRF)	Government Securities	Auction Treasury Bills (ATBs)
1	2	3	4	5	
1	Andhra Pradesh	8898	877	--	-
2	Arunachal Pradesh	1826	3	--	-
3	Assam	4083	58	--	-
4	Bihar	5996	--	--	-
5	Chhattisgarh	5021	--	1	4550
6	Goa	657	332	--	-
7	Gujarat	5244	513	--	-
8	Haryana	832	1296	--	-
9	Himachal Pradesh	--	--	--	-
10	Jammu & Kashmir UT	--	--	--	-
11	Jharkhand	485	--	--	-
12	Karnataka	6192	--	--	21000
13	Kerala	2295	--	--	-
14	Madhya Pradesh	--	984	--	-
15	Maharashtra	45173	680	--	22500
16	Manipur	165	108	--	-
17	Meghalaya	778	44	9	-
18	Mizoram	376	49	--	-
19	Nagaland	1765	36	--	-
20	Odisha	12008	1564	91	24053
21	Puducherry	329	--	--	1109
22	Punjab	1680	--	8	-
23	Rajasthan	--	--	129	4200
24	Tamilnadu	7129	--	40	17520
25	Telangana	6087	1331	--	-
26	Tripura	400	10	--	600
27	Uttar Pradesh	992	--	180	-
28	Uttarakhand	3490	136	--	-
29	West Bengal	9555	622	214	-
	<b>Total</b>	<b>131456</b>	<b>8645</b>	<b>671</b>	<b>95532</b>

**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.

## No. 49: Market Borrowings of State Governments

(₹ Crore)

Sr. No.	State	2019-20		2020-21		2021-22						Total amount raised, so far in 2021-22	
						June		July		August			
		Gross Amount Raised	Net Amount Raised	Gross	Net								
1	2	3	4	5	6	7	8	9	10	11	12	13	
1	Andhra Pradesh	42415	33444	50896	41915	6000	5420	3750	2242	2000	840	19750	15219
2	Arunachal Pradesh	1366	1287	767	767	-	-	-	-	-	-	400	400
3	Assam	12906	10996	15030	14230	-	-	500	500	1700	1700	2200	2200
4	Bihar	25601	22601	27285	24685	2000	2000	4000	4000	2000	2000	10000	10000
5	Chhattisgarh	11680	10980	13000	10500	-	-	1000	1000	-	-	1000	1000
6	Goa	2600	2000	3354	3054	300	300	200	200	200	200	700	700
7	Gujarat	38900	28600	44780	33280	4500	3500	3000	2000	1500	-500	9000	4000
8	Haryana	24677	20677	30000	25550	5000	5000	-	-	2500	2000	12500	9200
9	Himachal Pradesh	6580	4460	6000	3755	-	-	-	-	-	-	-	-
10	Jammu & Kashmir UT	7869	6760	9328	6020	1700	1000	-	-	500	500	3100	2400
11	Jharkhand	7500	5656	9400	8900	-	-	-	-	-	-500	-	-500
12	Karnataka	48500	42500	69000	61900	-	-	-	-	-	-	-	-
13	Kerala	18073	12617	28566	23066	7500	7500	-	-	2500	1500	11500	10500
14	Madhya Pradesh	22371	16550	45573	38773	-	-	2000	2000	-	-	2000	2000
15	Maharashtra	48498	32998	69000	50022	10500	10500	5750	3750	8000	5000	37750	32750
16	Manipur	1757	1254	1302	1044	200	200	200	200	-	-	600	600
17	Meghalaya	1344	1070	1777	1587	200	200	-	-	-	-	400	300
18	Mizoram	900	745	944	677	-	-	100	100	-	-100	250	-
19	Nagaland	1000	423	1721	1366	250	150	-	-	150	150	750	650
20	Odisha	7500	6500	3000	500	-	-	-	-1000	-	-500	-	-2000
21	Puducherry	970	470	1390	790	-	-	-	-	-	-	-	-
22	Punjab	27355	18470	32995	23467	3500	1850	1200	-100	1250	-950	5950	-1600
23	Rajasthan	39092	24686	57359	44273	8500	7500	3100	3100	-	-	19600	18100
24	Sikkim	809	481	1292	1292	-	-	-	-	-	-	500	500
25	Tamil Nadu	62425	49826	87977	76796	12000	10500	8000	6500	6000	6000	38000	34000
26	Telangana	37109	30697	43784	37365	8500	8080	3000	1908	3500	2660	20000	16731
27	Tripura	2928	2578	1916	1631	-	-50	-	-	-	-	-	-150
28	Uttar Pradesh	69703	52744	75500	59185	5000	4000	7500	6000	7500	5988	20000	13488
29	Uttarakhand	5100	4500	6200	5208	700	700	500	300	-	-	1200	500
30	West Bengal	56992	40882	59680	50180	8500	5500	5500	3500	5000	3000	21000	8827
	Grand Total	634521	487454	798816	651777	84850	73850	49300	36200	44300	28988	238150	179815

- : 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.

### **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**

- NM<sub>2</sub> and NM<sub>3</sub> 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.  
 L<sub>1</sub> and L<sub>2</sub> are compiled monthly and L<sub>3</sub> 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 SWAP arrangement. 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 2018-19 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 revised table format since June 2016, incorporates the ownership pattern of State Governments Securities and Treasury Bills along with the Central Government Securities.

State Government Securities include special bonds issued under Ujwal DISCOM Assurance Yojana (UDAY) scheme. Bank PDs are clubbed under Commercial Banks. However, they form very small fraction of total outstanding securities.

The category 'Others' comprises State Governments, Pension Funds, PSUs, Trusts, HUF/Individuals etc.

**Table No. 46**

GDP data is based on 2011-12 base. GDP data from 2019-20 pertains to the Provisional Estimates of National Income released by National Statistics Office on 29<sup>th</sup> May 2020. GDP for 2020-21 is from Union Budget 2020-21. Data pertains to all States and Union Territories.

Total receipts and total expenditure exclude National Calamity Contingency Fund expenditure.

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://dbie.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

<b>Name of Publication</b>	<b>Price</b>	
	<b>India</b>	<b>Abroad</b>
1. Reserve Bank of India Bulletin 2021	₹300 per copy (over the counter) ₹350 per copy (inclusive of postage) ₹4,200 (one year subscription - inclusive of postage) ₹3,150 (one year concessional rate*) ₹3,360 (one year subscription - inclusive of postage <sup>@</sup> ) ₹2,520 (one year concessional rate <sup>@</sup> )	US\$ 15 per copy (inclusive of postage) US\$ 180 (one-year subscription) (inclusive of air mail courier charges)
2. Handbook of Statistics on the Indian States 2019-20	₹550 (Normal) ₹600 (inclusive of postage)	US\$ 24 (inclusive of air mail courier charges)
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4. State Finances - A Study of Budgets of 2020-21	₹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 of the committee on Fuller Capital account Convertibility (Tarapore Committee Report II)	₹140 per copy (over the counter) ₹170 per copy (inclusive of postal charges)	US\$ 25 per copy (inclusive of air mail courier charges)
6. Banking Glossary (2012)	₹80 per copy (over the counter) ₹120 per copy (inclusive of postal charges)	
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10. Reserve Bank of India Occasional Papers Vol. 40, No. 2, 2019	₹200 per copy (over the counter) ₹250 per copy (inclusive of postal charges)	US\$ 18 per copy (inclusive of air mail courier charges)
11. Reserve Bank of India Occasional Papers Vol. 41, No. 1, 2020	₹200 per copy (over the counter) ₹250 per copy (inclusive of postal charges)	US\$ 18 per copy (inclusive of air mail courier charges)
12. Perspectives on Central Banking Governors Speak (1935-2010) Platinum Jubilee	₹1400 per copy (over the counter)	US\$ 50 per copy (inclusive of air mail courier charges)

**Notes**

1. Many of the above publications are available at the RBI website ([www.rbi.org.in](http://www.rbi.org.in)).
  2. Time Series data are available at the Database on Indian Economy (<http://dbie.rbi.org.in>).
  3. The Reserve Bank of India History 1935-1997 (4 Volumes), Challenges to Central Banking in the Context of Financial Crisis and the Regional Economy of India: Growth and Finance are available at leading book stores in India.
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