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GOVERNOR'S STATEMENT

Governor's Statement

Governor's Statement*

Shaktikanta Das

As we come to the end of yet another turbulent year, the global economy is still marred by profound shocks and unprecedented uncertainty. Mixed signals are emanating from the geopolitical situation and financial market volatility. In the beginning of this year (2022), just as the COVID-19 pandemic was receding, the war in Ukraine overwhelmed the world in a black swan moment and fundamentally altered the global economic outlook. Surges in food and energy prices and shortages in key staples have severely affected the poorer sections across the world. Though international food, energy and other commodity prices have eased moderately in recent times, inflation remains high and broad-based. The IMF has projected that more than one-third of the global economy will contract this year or next year. While no country is spared the ill-effects of such large shocks, emerging market economies (EMEs), especially the ones dependent on food, energy and commodity imports, have been the worst affected.

Looking beyond the pandemic and the war, fragmentation in trade, finance and technology is also adding to the forces of deglobalisation. Supply chains are being redrawn on considerations of geopolitical security, leading to 'reshoring' and 'friend-shoring'. Food and energy security, together with climate change, have become the biggest challenges to the world.

In this hostile international environment, the Indian economy remains resilient, drawing strength from its macroeconomic fundamentals. Our financial system remains robust and stable. Banks and corporates are healthier than before the crisis. Bank

credit is growing in double digits for 8 months now. India is widely seen as a bright spot in an otherwise gloomy world. Yet, our inflation remains elevated, as in most parts of the world. Global spillovers continue to impart high volatility and uncertainty.

Decisions and Deliberations of the Monetary Policy Committee (MPC)

The Monetary Policy Committee (MPC) met on 5th, 6th and 7th December 2022. Based on an assessment of the macroeconomic situation and its outlook, the MPC decided by a majority of 5 members out of 6 to increase the policy repo rate by 35 basis points to 6.25 per cent, with immediate effect. Consequently, the standing deposit facility (SDF) rate stands adjusted to 6.00 per cent, and the marginal standing facility (MSF) rate and the Bank Rate to 6.50 per cent. The MPC also decided by a majority of 4 out of 6 members to remain focused on withdrawal of accommodation to ensure that inflation remains within the target going forward, while supporting growth.

Let me now elaborate on the MPC's rationale behind these decisions on the policy rate and the stance. Growth prospects across the world are dampening. Financial markets remain nervous and are characterised by high volatility and price swings.

For the Indian economy, the outlook is supported by good progress of *rabi* sowing, sustained urban demand, improving rural demand, a pick-up in manufacturing, rebound in services and robust credit expansion. Consumer price inflation moderated to 6.8 per cent (y-o-y) in October as expected, but it still remains above the upper tolerance band of the target. Core inflation is exhibiting stickiness. While headline inflation may ease through the rest of the year and Q1:2023-24, it is expected to rule above the target. The medium-term inflation outlook is exposed to heightened uncertainties from geopolitical tensions, financial market volatility and the rising incidence of weather-related disruptions.

* Governor's Statement - December 7, 2022.

On balance, the MPC was of the view that further calibrated monetary policy action is warranted to keep inflation expectations anchored, break core inflation persistence and contain second-round effects. These actions will strengthen the medium-term growth prospects of the Indian economy. Accordingly, the MPC decided to increase the policy repo rate by 35 basis points to 6.25 per cent and to remain focused on withdrawal of accommodation, while supporting growth.

As regards the stance of monetary policy, the MPC took a holistic view of the policy rate and liquidity conditions relative to inflation. Adjusted for inflation, the policy rate still remains accommodative. Over the next 12 months, inflation is expected to remain higher than the 4 per cent target. System liquidity remains in surplus with an average daily absorption under the liquidity adjustment facility (LAF) of ₹1.6 lakh crore in November 2022. Since then, it has gone up to ₹2.6 lakh crore as on 5th December. The overall monetary and liquidity conditions remain accommodative and hence, the MPC decided to remain focused on withdrawal of accommodation.

Assessment of Growth and Inflation Growth

According to the latest data released by National Statistical Office (NSO), real gross domestic product (GDP) posted a growth of 6.3 per cent year-on-year (y-o-y) in Q2:2022-23, driven primarily by private consumption and investment. This is in line with our expectations.

Going into Q3:2022-23, economic activity continued to gain strength in October. Urban consumption firmed up further, driven by sustained recovery in discretionary spending, especially on services such as travel, tourism and hospitality. Passenger vehicle sales and domestic air passenger traffic posted robust y-o-y growth. Rural demand is recovering as reflected in the pace of tractor and retail two-wheeler sales, with rising farm activity. Investment

activity is also gaining traction. Non-food bank credit rose by ₹10.6 lakh crore during April-November 2022 as compared with an increase of ₹1.9 lakh crore last year. The total flow of resources to the commercial sector expanded by ₹14.7 lakh crore during 2022-23 (up to November 2022) as compared with ₹6.8 lakh crore in the same period of 2021-22. On the other hand, the drag from net external demand further accentuated in October as merchandise exports contracted by 12.1 per cent (y-o-y) after expanding during the previous 19 months. Merchandise imports expanded by 10.0 per cent in October.

On the supply side, the agricultural sector remains resilient. *Rabi* sowing got off to a strong start. The area sown so far is 6.8 per cent higher than the normal sown area (as on December 2, 2022). The manufacturing PMI rose from 55.3 in October to 55.7 in November. The PMI for the services sector expanded from 55.1 in October to 56.4 in November. Incidentally, the manufacturing and services PMIs for India in November are among the highest in the world. Construction activity is picking up after the end of the south-west monsoon, as indicated by high growth of steel consumption in October.

Going ahead, investment activity will get support from government capex. A pick-up in the share of fixed assets in total assets of manufacturing companies was visible in H1¹. According to our surveys, consumer confidence has improved further. Manufacturing and infrastructure sector firms are optimistic about the business outlook². Services sector firms also expect activity to expand. In an interconnected world, we cannot remain entirely decoupled from adverse spillovers from the global slowdown and its negative impact on our net exports and overall economic activity. The biggest risks to the outlook continue

¹ The share of funds used for fixed assets in total incremental funds of 1575 manufacturing companies rose from 0.1 per cent in H1:2021-22 to 19.4 per cent in H1:2022-23.

² The expectations of manufacturing, infrastructure and services firms are based on early results of the RBI's enterprise surveys.

to be the headwinds emanating from protracted geopolitical tensions, global slowdown and tightening of global financial conditions. Taking all these factors into consideration, real GDP growth for 2022-23 is projected at 6.8 per cent, with Q3 at 4.4 per cent and Q4 at 4.2 per cent. The risks are evenly balanced. Real GDP growth is projected at 7.1 per cent for Q1:2023-24 and at 5.9 per cent for Q2. Even after this revision in our growth projection for 2022-23, India will still be among the fastest-growing major economies in the world.

Inflation

The inflation trajectory has largely evolved in line with the outlook given by us in June 2022. Going forward, food inflation is likely to moderate with the usual winter softening and the likelihood of a bountiful *rabi* harvest, but pressure points remain in the form of prices of cereals, milk and spices in the near-term. The main risk is that core inflation (CPI excluding food and fuel) remains sticky and elevated. Overall, the CPI price momentum remains high. Risks from adverse weather events add to uncertainty in the outlook.

Global commodity prices, including crude oil, have undergone some downward correction, but uncertainty continues to surround the near-term outlook in view of the prolonging geo-political hostilities. The outlook for the US dollar and hence imported inflation also remains uncertain. Moreover, the resurgence in domestic services sector activity could also lead to price increases, especially as firms pass on input costs. Taking into account these factors and assuming an average crude oil price (Indian basket) of US\$ 100 per barrel, headline inflation is projected at 6.7 per cent in 2022-23, with Q3 at 6.6 per cent and Q4 at 5.9 per cent. The risks are evenly balanced. CPI inflation for Q1:2023-24 is projected at 5.0 per cent and for Q2 at 5.4 per cent, on the assumption of a normal monsoon.

What do these growth and inflation scenarios convey? Let me summarise. GDP growth in India remains resilient and inflation is expected to moderate; but the battle against inflation is not over. Pressure points from high and sticky core inflation and exposure of food inflation to international factors and weather-related events do remain. While being watchful of the impact of our earlier monetary policy actions, we will keep Arjuna's eye³ on the evolving inflation dynamics and be ready to act as may be necessary. Our actions will be nimble and in the best interest of the economy. The aspect of growth will obviously be kept in mind.

Liquidity and Financial Market Conditions

Overall system liquidity remains in surplus. During October-November, the average total absorption under the liquidity adjustment facility (LAF) was ₹1.4 lakh crore, down from the average of ₹2.2 lakh crore during August-September.

In the period ahead, liquidity conditions are likely to improve due to several factors which would include moderation in currency in circulation in the post-festival period, pick up in government expenditure in the last few months of the financial year and higher forex inflows due to the return of portfolio investors. Tax outflows and currency demand do produce transient episodes of tight liquidity, but a holistic view needs to be taken. I reiterate that the Reserve Bank remains nimble and flexible in its liquidity management operations to meet the requirements of the productive sectors of the economy. Therefore, although the Reserve Bank remains in absorption mode, we are ready to conduct LAF operations that inject liquidity as may be needed through our main operations. In doing so, however, we will look for

³ Das, Shaktikanta (2022), "India: A Story of Resilience"; Inaugural Address at the Annual FIBAC 2022 Conference Organised Jointly by FICCI and IBA, Mumbai on November 02, 2022.

a durable sign of a turn in the liquidity cycle when banks draw down large part of their standing deposit facility (SDF) and variable rate reverse repo (VRRR) balances. The Reserve Bank remains committed to flexibility and two-sidedness in liquidity operations, but market participants must wean themselves away from the overhang of liquidity surpluses.

As part of our gradual move towards normal liquidity operations, we have decided to restore market hours - from 9.00 am to 5.00 pm - in respect of call/notice/term money, commercial paper, certificates of deposit and repo in corporate bond segments of the money market as well as for rupee interest rate derivatives.

The pace of transmission of monetary policy actions to lending and deposit rates has quickened in the current tightening phase, beginning May 2022. The weighted average lending rates (WALRs) on fresh and outstanding rupee loans have increased by 117 bps and 63 bps, respectively, during the period May to October 2022. On the deposit side, the weighted average domestic term deposit rate on fresh and outstanding deposits increased by 150 bps and 46 bps, respectively, during the same period. We are keeping a close watch on this process of transmission.

The appreciation of the US dollar this year, which precipitated large scale depreciation of all major global currencies including the Indian rupee (INR), has drawn wide attention. It is important to make an objective assessment of the movement of the INR in the context of global and domestic macroeconomic and financial market developments. Through this episode of US dollar appreciation, the INR's movements have been the least disruptive, relative to peers. In fact, the INR has appreciated against all other major currencies except a few⁴. Cross-country comparisons of exchange rate movements are often made on an inflation-

adjusted basis or what is called in real effective terms. On a financial year basis (*i.e.*, from April 2022 to October 2022), the INR has appreciated by 3.2 per cent in real terms⁵, even as several major currencies have depreciated. The story of the INR has been one of India's resilience and stability.

As stated by me in a recent speech⁶, the terminal interest rate for the US Fed is anybody's guess, but it cannot be the case that their monetary policy will be tightened endlessly. When the tightening is over, the tide will surely turn. Capital flows to India will improve and external financing conditions will ease. In this complex world with both push and pull factors at play, the INR - which is market-determined - should be allowed to find its level and that is what we have been striving to ensure. We must deal with the current global hurricane with confidence and endurance.

External Sector

The external sector has been affected by strong global headwinds. Slowing global demand is weighing on our merchandise exports. The growth of merchandise imports is also decelerating. At the same time, the impact of the terms of trade shock due to the war in Ukraine is getting gradually normalised. It is also important to take cognisance of India's innate buffers. The growth of services exports, mainly contributed by software, business and travel services remained robust at 29.1 per cent in April-October 2022. Remittances are scaling new heights and the outlook is optimistic with pick-up in activity in the middle east. According to the latest update of the World Bank, India's remittances are estimated to grow by around 12 per cent to US\$ 100 billion in 2022 from US\$ 89.4 billion in 2021. In Q1:2022-23, remittances to India rose by 22.6 per cent year-on-year. The net balance under services and remittances remains in large surplus, partly offsetting the trade deficit.

⁴ Barring the Swiss franc, the Canadian dollar, the Singapore dollar, the Russian ruble *etc.*

⁵ Based on BIS real effective exchange rates.

⁶ Same as footnote 3.

Consequently, even if the current account deficit is higher than 2021-22, it is eminently manageable and within the parameters of viability.

On the financing side, net foreign direct investment (FDI) flows have remained robust and rose to US \$ 22.7 billion during April-October 2022 from US\$ 21.3 billion in the corresponding period last year. Foreign portfolio flows have resumed in recent months and were positive at US\$ 11.8 billion during July to 5th December 2022, led by equity flows. As a result of the measures announced by the RBI on July 6, 2022 to enhance forex inflows, new external commercial borrowing (ECB) agreements have been concluded for US\$ 8.6 billion. This includes US\$ 5.1 billion which exceed the earlier threshold of US\$ 750 million under the automatic route. The size of forex reserves is comfortable and has also increased. It has gone up from US\$ 524.5 billion on October 21, 2022 to US\$ 561.2 billion as on December 2, 2022 covering around nine months of projected imports for 2022-23. Further, India's external debt ratios are low by international standards⁷.

Additional Measures

I shall now announce certain additional measures.

SLR Holdings in Held to Maturity (HTM) category

To provide further flexibility to banks in managing their investment portfolios, it has been decided to extend the dispensation of enhanced HTM limit of 23 per cent up to March 31, 2024. Banks will now be allowed to include securities acquired between September 1, 2020 and March 31, 2024 in the enhanced HTM limit. The HTM limits would be restored from 23 per cent to 19.5 per cent in a phased manner starting from the quarter ending June 30, 2024.

⁷ The ratio of reserves to total external debt has increased to 95.5 per cent in June 2022 from 71.3 per cent in 2012-13. The debt service ratio (principal repayments and interest payments as a ratio of current earnings) at 4.9 per cent in June 2022 was lower than 5.9 per cent in 2012-13. Currently, it is one of the lowest among emerging market peers.

Enhancing the Mandates of Unified Payments Interface (UPI)

The UPI has emerged as the most popular retail payments system in India. It currently includes functionality to process payment mandates for recurring as well as single-block-and-single-debit transactions. The capabilities in UPI will be further enhanced by introducing single-block-and-multiple-debits functionality. This facility will enable a customer to block funds in his/her account for specific purposes, which can be debited whenever needed. This will significantly enhance the ease of making payments for investments in securities including through the Retail Direct platform as well as e-commerce transactions.

Expanding the Scope of Bharat Bill Payment System (BBPS)

The BBPS has been steadily expanding since its launch in 2017. At present, it handles recurring bill payments for merchants and utilities and does not cater to non-recurring bills. It also does not cater to bill payments or collections such as payment of fees for professional services, education fees, tax payments, rent collections, etc. for individuals even if those are recurring in nature. Therefore, the scope of BBPS is being enhanced to include all categories of payments and collections, both recurring and non-recurring, and for all category of billers (businesses and individuals). This will make the BBPS platform accessible to a wider set of individuals and businesses who can benefit from the transparent payments experience, faster access to funds and improved efficiency.

Hedging of Gold in the International Financial Services Centre (IFSC)

Resident entities in India are currently not permitted to hedge their exposure to gold price risk in overseas markets. With a view to providing greater flexibility to these entities to hedge the price risk of their gold exposures, resident entities will now be permitted to hedge their gold price risk on recognised

exchanges in the IFSC. This measure will benefit importers/exporters of gold such as jewellers and industries which use gold as an intermediate or raw material.

Conclusion

The last three years have been unusually challenging as we encountered multiple shocks. The buffers we built in the years leading to COVID-19 in terms of accumulating reserves and inflation averaging close to the target came good to deal with these repeated shocks. In this arduous period, our constant endeavour has been to take timely and effective measures. It is gratifying to see that our policies have yielded positive results.

The course of our future policy will duly consider new data releases and the evolving outlook of the economy as well as the effect of our past actions.

In meeting the challenges thrust upon us by a hostile global environment, we should not lose sight

of the task of improving the long-term potential of our country. Green transition, reconfiguration of supply chains and logistics, production-linked incentive schemes, digital banking and financial services, and innovative technologies offer immense opportunities for the Indian economy.

As we enter 2023, India's G20 presidency provides us a historic opportunity to play a bigger role in the international arena. The theme of our Presidency "*Vasudhaiva Kutumbakam*" – the world is one family – reflects our vision of global cooperation for universal welfare. We must remain optimistic and derive inspiration from the words of Gandhiji: "*Let no one think that it is impossible because it is difficult. It is the highest goal, and it is no wonder that the highest effort should be necessary to attain it.*"⁸ As the current year ends and a new one awaits, I wish you all a happy new year in advance.

Thank you. Namaskar.

⁸ The Story of My Experiments with Truth: M.K. Gandhi translated from Gujarati by Mahadev Desai; Navajivan Publishing House, Ahmedabad.

MONETARY POLICY STATEMENT FOR 2022~23

Resolution of the Monetary Policy Committee (MPC)
December 5-7, 2022

*Monetary Policy Statement, 2022-23 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 (December 7, 2022) decided to:

- Increase the policy repo rate under the liquidity adjustment facility (LAF) by 35 basis points to 6.25 per cent with immediate effect.

Consequently, the standing deposit facility (SDF) rate stands adjusted to 6.00 per cent and the marginal standing facility (MSF) rate and the Bank Rate to 6.50 per cent.

- The MPC also decided to remain focused on withdrawal of accommodation to ensure that inflation remains within the target going forward, while supporting growth.

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

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

Assessment

Global Economy

2. The global economic outlook is skewed to the downside. Global growth is set to lose momentum as monetary policy actions tighten financial conditions and as consumer confidence weakens with the rising

cost of livelihood. Inflation remains elevated and persistent across countries as they grapple with food and energy price shocks and shortages. More recently, however, there are some signs of moderation in price pressures, which have raised expectations of an easing in the pace of monetary tightening. Alongside easing in sovereign bond yields, the US dollar has come off its highs. Capital flows to emerging market economies (EMEs) remain volatile and global spillovers pose risks to growth prospects.

Domestic Economy

3. On the domestic front, real gross domestic product (GDP) increased by 6.3 per cent year-on-year (y-o-y) in Q2:2022-23 after an increase of 13.5 per cent in Q1. On the supply side, gross value added (GVA) rose by 5.6 per cent in Q2.

4. In Q3, economic activity is exhibiting resilience. In the agricultural sector, a pick-up in *rabi* sowing (6.4 per cent higher than a year ago on December 2) is supported by the good progress of the north-east monsoon and above average reservoir levels. Activity in the industry and services sectors is in expansion mode, as reflected in purchasing managers' indices (PMIs) and other high frequency indicators.

5. Aggregated demand conditions have been supported by pent-up spending and discretionary expenditures during the festival season, although their evolution is somewhat uneven across sectors. Urban demand has remained buoyant, and rural demand is recovering. Investment activity is in modest expansion. Merchandise exports contracted in October after an expansion for 19 consecutive months. Growth in non-oil non-gold imports decelerated.

6. CPI inflation moderated to 6.8 per cent (y-o-y) in October 2022 from 7.4 per cent in September, with favourable base effects mitigating the impact of pick-up in price momentum in October. Food inflation softened, aided by easing inflation in vegetables and edible oils, despite sustained pressures from prices

* Released on December 7, 2022.

of cereals, milk and spices. Fuel inflation registered some easing in October, driven by softening of price inflation in LPG, kerosene (PDS) and firewood and chips. Core CPI (*i.e.*, CPI excluding food and fuel) inflation persisted at elevated levels at 6 per cent, with price pressures across most of its constituent sub-groups.

7. The overall liquidity remains in surplus, with average daily absorption under the liquidity adjustment facility (LAF) at ₹1.4 lakh crore during October-November as compared with ₹2.2 lakh crore in August-September. On a y-o-y basis, money supply (M3) expanded by 8.9 per cent as on November 18, 2022 while bank credit rose by 17.2 per cent. India's foreign exchange reserves were placed at US\$ 561.2 billion as on December 2, 2022.

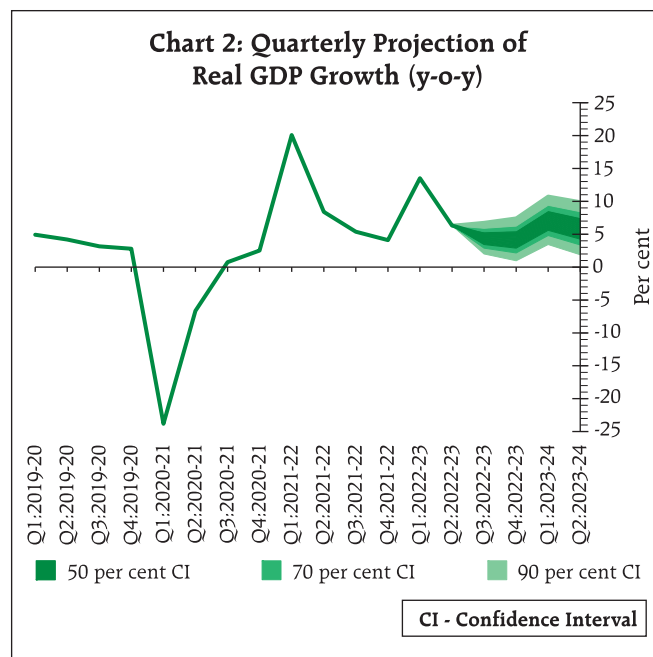
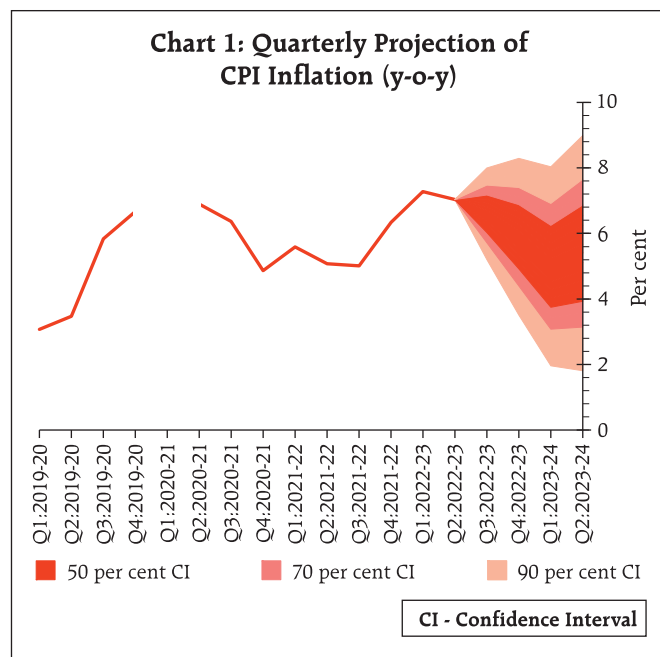
Outlook

8. The inflation trajectory going ahead would be shaped by both global and domestic factors. In case of food, while vegetable prices are likely to see seasonal winter correction, prices of cereals and spices may stay elevated in the near-term on supply concerns. High feed costs could also keep inflation elevated in respect of milk. Adverse climate events – both domestic and global – are increasingly becoming a significant source of upside risk to food prices. Global demand is weakening. Unabating geopolitical tensions continue to impart uncertainty to the food and energy prices outlook. The correction in industrial input prices and supply chain pressures, if sustained, could help ease pressures on output prices; but the pending pass-through of input costs could keep core inflation firm. Imported inflation risks from the US dollar movements need to be watched closely. Taking into account these factors and assuming an average crude oil price (Indian basket) of US\$ 100 per barrel, inflation is projected at 6.7 per cent in 2022-23, with Q3 at 6.6 per cent and Q4 at 5.9 per cent, and risks evenly balanced. CPI inflation for Q1:2023-24 is

projected at 5.0 per cent and for Q2 at 5.4 per cent, on the assumption of a normal monsoon (Chart 1).

9. On growth, the agricultural outlook has brightened, with the prospects of a good *rabi* harvest. The sustained rebound in contact-intensive sectors is supporting urban consumption. Robust and broad-based credit growth and government's thrust on capital spending and infrastructure should bolster investment activity. According to the RBI's survey, consumer confidence is improving. The economy, however, faces accentuated headwinds from protracted geopolitical tensions, tightening global financial conditions and slowing external demand. Taking all these factors into consideration, the real GDP growth for 2022-23 is projected at 6.8 per cent with Q3 at 4.4 per cent and Q4 at 4.2 per cent, with risks evenly balanced. Real GDP growth is projected at 7.1 per cent for Q1:2023-24 and at 5.9 per cent for Q2 (Chart 2).

10. Inflation has ruled at or above the upper tolerance band since January 2022 and core inflation is persisting around 6 per cent. Headline inflation is expected to remain above or close to the upper threshold in Q3 and Q4:2022-23. It is likely to moderate in H1:2023-24 but will still remain well above the target. Meanwhile, economic activity has held up well and is expected to be resilient, supported by domestic demand. Net exports would remain subdued due to the drag from evolving external demand conditions. Further, the impact of monetary policy measures undertaken needs to be watched. On balance, the MPC is of the view that, further calibrated monetary policy action is warranted to keep inflation expectations anchored, break the core inflation persistence and contain second round effects, so as to strengthen medium-term growth prospects. Accordingly, the MPC decided to increase the policy repo rate by 35 basis points to 6.25 per cent. The MPC also decided to remain focused on withdrawal of accommodation to ensure that inflation remains within the target going forward, while supporting growth.



11. Dr. Shashanka Bhide, Dr. Ashima Goyal, Dr. Rajiv Ranjan, Dr. Michael Debabrata Patra and Shri Shaktikanta Das voted to increase the policy repo rate by 35 basis points. Prof. Jayanth R. Varma voted against the repo rate hike.

12. Dr. Shashanka Bhide, Dr. Rajiv Ranjan, Dr. Michael Debabrata Patra and Shri Shaktikanta Das voted to remain focused on withdrawal of accommodation to

ensure that inflation remains within the target going forward, while supporting growth. Dr. Ashima Goyal and Prof. Jayanth R. Varma voted against this part of the resolution.

13. The minutes of the MPC's meeting will be published on December 21, 2022.

14. The next meeting of the MPC is scheduled during February 6-8, 2023.

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) Regulation and Supervision; (ii) Payment and Settlement Systems; and (iii) Financial Markets.

I. Regulation and Supervision

1. SLR Holdings in Held to Maturity (HTM) category

The Reserve Bank had increased the limits under Held to Maturity (HTM) category from 19.5 per cent to 23 per cent of net demand and time liabilities (NDTL) in respect of statutory liquidity ratio (SLR) eligible securities acquired on or after September 1, 2020, up to March 31, 2023. This dispensation of enhancement in HTM limit was made available up to March 31, 2023. With a view to enable banks to better manage their investment portfolios, it has been decided to extend the dispensation of enhanced HTM limit of 23 per cent up to March 31, 2024 and allow banks to include securities acquired between September 1, 2020 and March 31, 2024 in the enhanced HTM limit. The HTM limits would be restored from 23 per cent to 19.5 per cent in a phased manner starting from the quarter ending June 30, 2024.

II. Payment and Settlement Systems

2. Enhancements to Unified Payments Interface (UPI) – Processing Mandates with Single-Block-and-Multiple-Debits

Unified Payments Interface (UPI) has emerged as a popular retail payments system for Person to Person (P2P) and Person to Merchant (P2M) transactions. UPI has features which enable processing of mandates for recurring transactions and single-block-and-single-debit functionality. Consequently, over 70 lakh autopay mandates are handled every month and more than half of Initial Public Offer (IPO) applications are processed using the block feature of UPI. The capabilities in UPI can be enhanced to enable a customer to create a payment mandate against a merchant by blocking

funds in his/her bank account for specific purposes which can be debited, whenever needed. This would be helpful for hotel bookings, purchase of securities in the secondary capital market as also purchase of government securities using the RBI's Retail Direct scheme, e-commerce transactions etc. This will build higher degree of trust in transactions as merchants will be assured of timely payments, while the funds remain in the customer's account till actual delivery of goods or services. It has, therefore, been decided to introduce a single-block-and-multiple debits functionality in UPI, which will significantly enhance the ease of making payments in e-commerce space and towards investments in securities. Separate instructions to NPCI will be issued shortly.

3. Expanding the Scope of Bharat Bill Payment System (BBPS) to include all Payments and Collections

Bharat Bill Payment System (BBPS), an interoperable platform operated by NPCI Bharat BillPay Ltd. (NBBL), has been facilitating the bill payment needs of consumers and billers alike. Since its launch in 2017, the Reserve Bank has, from time to time, announced various improvements to this platform like including all categories of billers who raise recurring bills, facilitating in-bound cross-border bill payments, reducing the eligibility criteria for Operating Units (BBPOUs), etc. The volume and value of transactions handled on the platform has been increasing steadily. However, BBPS currently does not enable non-recurring payments or collection requirements of individuals even if they are recurring in nature. Consequently, some categories of payments / collections remain outside the ambit of the BBPS viz., professional service fee payments, education fees, tax payments, rent collections, etc. It has, therefore, been decided to expand the scope of BBPS to include all categories of payments and collections, both recurring and non-recurring in nature. This will make the platform accessible to a wider set of individuals and businesses who can benefit from the transparent and uniform payments experience, faster access to funds

and improved efficiency. Separate guidelines will be issued to NBBL in this regard.

III. Financial Markets

4. Hedging of Gold Price Risk in the International Financial Services Centre (IFSC)

Resident entities in India are currently not permitted to hedge their exposure to gold

price risk in overseas markets. With a view to providing greater flexibility to these entities to hedge the price risk of their gold exposures efficiently, it has been decided to permit resident entities to hedge their gold price risk on recognised exchanges in the International Financial Services Centre (IFSC). The related instructions will be issued separately.

SPEECHES

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M K Jain

*Inaugural Address at the Annual Research Conference**

Shaktikanta Das

I am delighted to be here with the economists of the Reserve Bank to inaugurate the annual research conference of the Department of Economic and Policy Research (DEPR). This conference is being held after a gap of more than three years. While I have been regularly interacting with many of you individually or in groups to discuss various issues, this is the first time that I am addressing all of you at one place.

The economics profession today faces one of its toughest times as the global economy has been hit by multiple shocks one after the other. These shocks have led to (i) globalisation of inflation, with advanced economies (AEs) facing multi-decadal high inflation; (ii) sustained slowdown in economic growth and trade, together with rising concerns about a possible global recession; (iii) deteriorating global food and energy security situation; (iv) realignment of global supply chains and policy-induced deglobalisation; and (v) weakening influence of multinational institutions in providing coordinated solutions to address global problems. Emerging market economies (EMEs) face an additional challenge from threats to their external sector stability.

Central banks, given their mandate on preserving macro stability, and the responsibility to be at the forefront of managing an economic crisis, have a culture of diligently building synergies between research and policy making. Research departments are thus empowered to work as the workhorse and as the think-tank for ensuring continuous supply of reliable processed information, analytical research and new

ideas. Such ideas help in designing time and state relevant policies. Rapid advancement in technology has brought with it an avalanche of data. The research department's role is to quickly process these data and derive meaningful inferences of relevance to policy making. I am extremely happy that the research department of the Reserve Bank has been successfully adapting to these evolving challenges, providing high quality research inputs on issues covering all key functions of the Bank and multiple dimensions of the economy. The department has also been contributing to the greater public good by joining and guiding public discourse on key policy issues through its research reports and other publications.

In my remarks today, I would like to cover three important areas which touch upon the vital role of the research department in a central bank. First, I would like to talk about the challenges to our policy making in the context of the developments in the recent years, both global and domestic, that warranted robust data and research support. Second, I would highlight some of the important contributions of the research department in these turbulent times. Third, I would lay out several challenges ahead that one could anticipate, requiring reimagination and rebalancing of the research function within the Reserve Bank.

I. Recent Challenges in Policy Making and Research Issues

Given the enormity of the multiple shocks, the world before the pandemic appears to have become a distant memory, but I would like to start with a brief account of the key policy issues we were grappling with in the pre-pandemic period. The global growth momentum was losing steam and domestically we were experiencing a slowdown in growth. The key challenge was to understand the reasons behind the observed decline in growth and propose structural reforms and other policy changes. Domestic inflation, on the other hand, was brought down, averaging 3.9

* Inaugural Address by Governor, Shri Shaktikanta Das at the Annual Research Conference of the Department of Economic and Policy Research, Reserve Bank of India, November 19, 2022, Hyderabad.

per cent during the flexible inflation targeting regime (June 2016 to February 2020). The research issue then was what factors contributed to the decline in inflation. Another important policy challenge was the uncertainty about the time it would take to complete the balance sheet repair process (or, the twin balance sheet problem of corporates and banks), and its ramifications for growth and financial stability. Globally, some of the empirical puzzles that received wide attention at that time were the weakening influence of economic slack on inflation (or, whether the Phillips curve is dead) and little risk to inflation from quantitative easing (or, the missing inflation conundrum). Widespread discontent about the negative spillover effects of globalisation had resulted in a growing shift towards protectionist policies, challenging the prevailing wisdom of greater openness to maximise economic welfare.

Since March 2020, three major shocks – the COVID-19 pandemic, the war in Europe and the aggressive tightening of monetary policy across countries – have posed very different set of challenges for economic research. Policy responses had to be swift and wide ranging to contain the adverse effects on the overall macro-financial conditions as well as sectoral vulnerabilities. The first major challenge was data collection during the first wave of the pandemic, and the associated statistical break in data. During the second wave of the pandemic, which was more lethal, collecting information on sector level stress became even more important for designing targeted policy interventions. The crisis thus created the opportunity to explore and harness the power of Big Data, and strengthen direct feedback mechanisms while working from home.

The pandemic also posed new research issues and analytical challenges for policy making. These include: (i) whether the pandemic caused a demand shock or a supply shock, and which shock was transitory and which one durable; (ii) the size and nature of policy

stimulus required, and their effectiveness; (iii) the relationship of national/localised lockdowns and vaccination with economic activity; (iv) the extent and nature of supply chain disruptions and its impact on inflation and growth; (v) the asymmetric impact of the shock/pace of recovery between contact-intensive services and manufacturing and agriculture; and (vi) the impact of the shock on household, corporate and financial sector balance sheets. Inflation and growth projections for monetary policy needed wider consultations with stakeholders and experts and use of survey-based data. Generation of alternative nowcasts using Artificial Intelligence (AI) and Machine Learning (ML) techniques also gained more importance.

The war in Europe brought with it new challenges, just when the economy was about to normalise fully despite the third wave of the pandemic. Suddenly, the world encountered a severe food crisis and an energy crisis. A new risk emerged in the form of fragmentation of the global economy driven by fast changing geopolitical considerations, that brought to the fore the need for reducing dependence on any single source for critical supplies. Commodity prices skyrocketed and supply chains knotted further. These factors led to globalisation of inflation and policy makers were presented with a new set of research issues – understanding the magnitude and likely persistence of these shocks, the transmission channels of these shocks and the effectiveness of alternative policy tools. As countries took recourse to trade policy measures (tariff and non-tariff) and fiscal measures (price freeze, tax cuts and subsidies to the vulnerable), the suitability of such measures in the Indian context also required focussed research attention.

As inflation in systemically important AEs turned out to be persistent rather than transitory, the third shock emanated in the form of aggressive tightening of monetary policy by the US Fed, and subsequent unrelenting appreciation of the US dollar. Spillovers to EMEs, and to India, were in the

form of capital outflows, depreciation pressures on currencies, reserve losses and imported inflation. Synchronised tightening of monetary policy globally has progressively increased the risk of a hard landing, *i.e.*, a recession to tame inflation. India is, however, differently placed. Age old research issues for EMEs like external sector sustainability assessment, feasible range of policy options to preserve sustainability, and analysis of their effectiveness have once again come to the forefront, more so because the nature and size of the spillover risk is very different now.

While I have presented some of the major policy challenges for us in the recent years, let me also talk about how the research department of the RBI has responded to these challenges. In the usual academic environment of a university or a research institute, it is much easier to assess the impact of research done by the staff by aggregating data on published research output, downloads, citations, and impact factor to give authors and organisations a score. In contrast, it is always hard to track in quantifiable terms the utility and impact of policy research undertaken in central banks, a major part of which is used internally and not published. I take this opportunity to place on record my appreciation of the excellent work done by the DEPR in these turbulent times. Your research inputs have been very valuable in shaping several of our policies and actions.

II. Contributions of DEPR and its role as a think-tank

For a full-service central bank like the RBI, its research function is all encompassing. Accordingly, the research department has a structure to be able to meet both the immediate as well as the strategic and policy research requirements. It has trained researchers, who not only specialise in specific areas, but also respond to the challenge of working on any issue of immediate relevance. Teamwork helps in pooling the comparative advantage of each, and a robust internal peer review process ensures reliability and quality of research inputs before their use in policy formulation.

As noted earlier, standard models, information collection systems and analytical frameworks used before COVID-19 became inadequate to deal with the complex dynamics associated with multiple shocks that hit the economy. Forecasting macroeconomic outcomes – crucial for conducting forward-looking monetary policy because of the usual lags in transmission – required a revamped approach. This involved strengthening the networks for direct collection of information from key stakeholders¹, greater reliance on survey-based information, wider use of AI/ML techniques, and new/modified models to capture changes in the behaviour of economic agents to different shocks facing the economy. A full information system, with about 70 high frequency lead/coincident indicators of the economy and use of state-of-the-art models to capture the time-varying dynamics helped us to generate results that passed the tests of robustness.

Studying the impact of the pandemic on growth-inflation dynamics and the outlook, proposing policy interventions with rationale and expected outcomes, and assessing the effectiveness of announced measures have been an integral part of the department's work all through the pandemic. For inflation analysis, increased attention was paid to interpreting prices data available from alternative sources when official data collection came to a halt during the early part of the pandemic. Real time mobility indicators and market arrivals data for agricultural commodities were also put to use. It became critical to study the role of supply and demand side factors as well as the behaviour of price mark-ups in view of the lockdowns. A supply chain pressure index for India was constructed in line with

¹ Feedback collected directly from stakeholders in several key sectors of the economy included vaccine manufacturing firms, pharmaceutical companies, transport operators, hotels, restaurants, tour operators, shopping malls, amusement parks, airport ground handling firms, MSMEs, mutual funds industry, small finance banks and micro finance entities, besides trade bodies and banks. This helped in dealing with the information gap created by the pandemic.

the global supply chain pressure index, which is now updated and monitored regularly for policy purposes.

When the inflation target reset date for another five-year period was fast approaching (starting April 1, 2021), a lively debate surfaced outside the Reserve Bank on the appropriateness of the 4 per cent inflation target with the ± 2 per cent tolerance band. The researchers of the RBI undertook a comprehensive review of the monetary policy framework, examining all relevant issues, and recommended retention of the same target for the next five years. We accepted this recommendation and sent proposals to the government accordingly. The Report on Currency and Finance (RCF) 2020-21 with the theme *Reviewing the Monetary Policy Framework* has greatly helped in providing clarity on monetary policy and issues related with the framework.

With the pandemic's impact lingering and supply chain disruptions persisting, an objective assessment of the scars of the pandemic and identification of reforms that could raise the country's growth trajectory became an important research issue. In the RCF 2021-22 with *Revive and Reconstruct* as theme, the department examined in detail the effectiveness and limits of crisis-time policies and the areas that needed policy attention to rejuvenate growth. The revival of the annual RCF, which had been published uninterrupted since 1937, after a gap of seven years has been widely appreciated.

A widely read publication of the department is the monthly "State of the Economy" article in the RBI bulletin, which is being published since November 2020. This revived the tradition that began with the first issue of the bulletin in January 1947 but was interrupted in 1995. The bulletin also carries research articles on various topics of policy relevance that help inform and guide public debate. Some of the important policy issues on which the economists of the department joined national debate through bulletin

articles expressing their independent views include: the impact of RBI's pandemic related policy measures; the relationship between RBI's balance sheet size and inflation; the equilibrium real interest rate in India; drivers of movements in the yield curve; COVID-19 impact on food price mark-ups; rural urban inflation dynamics; risk analysis of state finances; the quality of public expenditure; external debt sustainability and vulnerability; privatisation/consolidation of public sector banks; estimation of green GDP for India; and the silent revolution in renewable energy.

To further strengthen the general government statistics in India, the maiden Report on Municipal Finances – detailing the local government finances data – was published by the department this month. The report covers finances of 201 municipal corporations (out of around 221), accounting for nearly 70 per cent of the finances of urban local bodies in India. The coverage will be expanded going ahead.

The department has also been expanding its scope of research activities to meet evolving challenges in areas such as climate change, digitalisation and global spillovers. The department collaborated with domain experts outside the Bank to compile KLEMS (*i.e.*, capital, labour, energy, material and services) data for India and has recently taken over the full responsibility for the same. The department would also be hosting the 6th Asia KLEMS conference in India next year.

III. Challenges Ahead for the Research Department

The world we face today is aptly described by using the acronym 'VUCA', which stands for volatility, uncertainty, complexity and ambiguity. Many of the backward-looking models, that run on past data, may fall short of providing useful information and estimates for policy. The department must further strengthen its consultative approach to collect first-hand information directly from the stakeholders. When the department was faced with the challenge

of explaining food inflation dynamics with greater certainty just before the pandemic, it conducted a nationwide survey of farmers, retailers and wholesalers. The department would repeat the survey next month to understand the changes brought out by the pandemic. The department also conducts a bi-monthly survey of retailers through its regional offices, collecting information from retailers on expected price changes of essential food items one-month ahead, which it uses in its nowcast of inflation. A team from the Bank is working jointly with the Indian Council for Research on International Economic Relations (ICRIER) to develop a food inflation projection framework, involving eminent agri-experts and market leaders in different food items. Such initiatives must become the norm in other areas of research in the Bank.

As I mentioned earlier, there is increasing use of Big Data and data generated by private sources for policy research. We cannot escape the fact that data is the new oil. The department may have to look at all such data, being mindful of ways to deal with misleading and noisy analysis that such data may at times throw up.

For the research function in the Bank to remain effective, it would require constant upgradation of skills of the economists in the department, recognising the new possibilities in the information age and access to superior computing power at lower costs these days. While the Bank has multiple schemes for training, both in India and abroad, for an economist there are two best ways to acquire the required skills – first, study and write more research papers regularly (or learning by doing); and second, have a PhD that prepares you with all basic skills for conducting research. An Economics Benchmark report by centralbanking.com in December 2021 after a survey of 33 central banks found that on average, one in five economists in a central bank have a PhD. I am glad to note that the Reserve Bank compares well

as one in four economists in our research department has a PhD. The Bank provides paid leave and financial incentives for staff to acquire PhD degrees and I hope in future our ranking would improve further. An integral part of skill upgradation would be embracing new techniques for applied research. With growing sophistication of the algorithms, the manifold increase in the three Vs of data – volume, velocity and variety, and the quantum leaps in computing, human intelligence can be used better for analysis, with AI/ML allowing automation of data processing.

From the standpoint of the Bank, research is increasingly becoming important to almost every major function, as a result of which research units have been set up in other departments. That process needs to be sustained and scaled up pro-actively. Moreover, in a vast and diverse country like India, research on regional issues also merit policy attention.

The department must internalise strategic medium to long-term research issues in its research agenda. Separate teams may work on such issues. This would help in identifying and maintaining a list of structural policy changes that can raise the growth trajectory of the economy in a sustainable and inclusive manner.

The trifecta of deglobalisation, climate change and deeper penetration of technology appears to be the most anticipated trend for the future. This can be potentially disruptive, requiring strategies to mitigate the associated risks. The after effects of the three shocks I mentioned earlier are still unfolding and would warrant constant vigil. The research function of the Reserve Bank, therefore, must remain prepared to respond to these multiple possibilities as it has done in the past.

I wish the conference all success and do hope that the learnings from different sessions here would help the department in setting new goals to further strengthen the research function of the Bank.

*The Lighter Side of Making Monetary Policy**

Michael Debabrata Patra

I am honoured to be invited to this year's Conclave. In a short span of eight years, the SBI Banking and Economics Conclave has emerged as an important platform of eminence and relevance for deliberating on issues shaping the banking system and more broadly, India's financial sector. This year, the backdrop is a daunting one.

Across the world, monetary policy authorities are engaged in the most aggressive and synchronised tightening in decades. They are resolute in their determination to put the genie of inflation back into the bottle. '75' is the new '25'. Their stances and forward guidance sound like the shrill calls of birds of prey. Financial markets are awash with surges of volatility – incoming data trigger either risk-off stampedes or relief rallies. Globally, a widespread fear is that the forceful monetary policy tightening will precipitate a hard landing, *i.e.*, a recession, or several of them. Geopolitical strife with no end in sight, centrifugal forces threatening to tear apart the unifying influence of global integration, and financial fragmentation are the new forces that seem to be chiseling the evolving global economic outlook.

I thought that I would take this opportunity to step back from the heat and flying debris now being associated with the outcomes of monetary policy actions. Instead, I propose to slip backstage and peer into what goes on underneath these outcomes. Perhaps,

this may help to understand the outcomes a little better. Perhaps, it will enable a more compassionate view of the people involved in the making of monetary policy, their trials and tribulations.

Monetary policy is by its nature a technical area of economic policy making. It is suffused with substantial inherent uncertainty. This uncertainty created primarily by the need for policy makers to guess the future¹. Monetary policy has to be forward-looking because of the lags with which a policy rates change get transmitted across the markets and eventually gets reflected in lending rates, mortgage rates and yields. Hence monetary policy can only hope to address future inflation, not today's inflation. It is often viewed as a specialist or niche subject, only intelligible to specialists. My own experience with soiling my hands is that all this is overstated. Undoubtedly, monetary policy makers today are treated like film stars. The public is constantly trying to second guess their likely moves. For this purpose, analysts pore over millions of data points in search of patterns of behaviour. They try to construct reduced-form explanations of monetary policy decisions – a polite expression for equations and statistical models – and attempt predictions on the basis of these regularities. In fact, the monetary policy reaction function – an equation which tries to predict the change in the policy rate if inflation deviates from the target and/or growth deviates from its trend – has spawned a cottage industry. But what is forgotten is that these regularities are based on past data and in that sense, they may provide an *ex-post*² explanation of why policy makers deviated from a so-called rule or why they did not. They are not *ex-ante* predictions of policy decisions because at the core of the decision is uncertainty and therefore, intelligent and well-

* Speech delivered by Michael Debabrata Patra, Deputy Governor, Reserve Bank of India in the 9th SBI Banking and Economics Conclave on November 24, 2022 at Mumbai. Valuable comments received from Sitikantha Pattanaik, Binod B Bhoi, Asish Thomas George, Soumasree Tewari, Rohan Bansal, Shelja Bhatia, Rahul Agarwal and editorial help from Vineet Kumar Srivastava and Samir Ranjan Behera are gratefully acknowledged.

¹ Deliberating American Monetary Policy: A Textual Analysis by Cheryl Schonhardt-Bailey, The MIT Press, 2013.

² After the horse has bolted from the stable.

informed judgement is called for – the celebrated smell test³.

As regards forecasts, monetary policy makers were created to make weather forecasters look good, to draw on an analogy on economists. In fact, it is said that monetary policy makers do have a sense of humour – that is why they put a decimal point on their forecasts⁴.

Yet, monetary policy makers are after all human beings, and humans bring with them humour in whatever they do. They laugh at each other, they laugh at themselves, and one reason cited for this – which I will deal with presently – is stress-busting. The theme of my talk is the humour that is an integral part of monetary policy making. This has not received attention either among economists or among the lay public. My purpose is to show you that if you allow humour into the conversation, you might end up understanding monetary policy, its objectives, decision making processes, forecasts and communication a little better. You might also end up thinking of monetary policy makers as humane as they dabble with macro-aggregates and the unforeseen future.

Or you might not. In April 2006, a panel of distinguished economists⁵ was asked to discuss the linkages between monetary policy and the personality

of the nation's central bankers. Remember: central bankers studiously practice an appearance of drab dullness which, they believe, conveys a sense of monetary stability. The specific question the panel was asked was: "What if the leader of the central bank told hilarious jokes and did card tricks?" I am not bluffing; there is a paper by this specific title in the *American Journal of Economics and Sociology*⁶ which I highly recommend for your reading.

The panel was not amused. One of the members concluded that demeanour has no role to play in the practice of central banking aimed at delivering price stability. Another opined that in the world of central banking and its interface with financial markets, opacity has value. A third member was of the view that central bankers should uphold a solid reputation for sobriety. In fact, rare instances of laughter reported in FOMC transcripts. In one influential view, they have been criticised as showing 'an incredible amount of complacency, with people mainly worried about inflation rather than the coming recession⁷. More on this later.

The Metamorphosis of Central Banking

Much of this ambivalence about monetary policy is due to the fact that the world of central banking has changed dramatically over the years. Monetary policy used to be a dark art, practised by magicians, and wrapped in secrecy⁸. During the days of the gold standard, central bankers were considered high priests of the temple of money. In its innermost sanctum sanctorum, they were believed to perform alchemy by which base metals like lead could

³ Robert Solow, 2010, Testimony to the House Committee on Science and Technology Subcommittee on Investigations and Oversight "Building a Science of Economics for the Real World" July 20, 2010: "I do not think that the currently popular DSGE models pass the smell test. The protagonists of this idea make a claim to respectability by asserting that it is founded on what we know about microeconomic behavior, but I think that this claim is generally phony. The advocates no doubt believe what they say, but they seem to have stopped sniffing or to have lost their sense of smell altogether."

⁴ <https://fpw.usu.edu/index.php/2017/01/09/why-did-god-create-economists-to-make-weather-forecasters-look-good/> and <https://livestream.com/accounts/5208398/events/6729795/videos/145963063>

⁵ Dr. George Tavlas, Head of the Economic Research Department, Bank of Greece; Professor Perry Mehrling, Columbia University, USA; Professor Jocelyn Pixley, University of New South Wales, Australia and Professor Laurence S. Moss, Babson College and then editor of AJES.

⁶ Mehrling, P., Laurence S. Moss, Jocelyn Pixley and George S. Tavlas, (2007), "What if the Leader of the Central Bank Told Hilarious Jokes and Did Card Tricks? A Panel of Experts", *The American Journal of Economics and Sociology* (AJES), Vol.66, No. 5, November.

⁷ Krugman, P. (2012), "Bubble Memories." *The Conscience of a Liberal*, <http://krugman.blogs.nytimes.com/2012/01/13/bubble-memories-2/>

⁸ *Monetary Policy: Theory in Practice* - Address by Mervyn King, Deputy Governor, January 7, 2000.

be transformed into noble metals such as gold. Mervyn King, Governor of the Bank of England from 2003-2013, writes that when he joined the Bank of England in 1991, he was fortunate to be invited to dine with a group that included Paul Volcker (the champion among central bankers). At the end of the evening, he asked Paul Volcker for any advice for a new central banker. Volcker replied in one word: "mystique" (King, 2000). That single word encapsulated much of the tradition and wisdom of central banking at that time.

Why were they so opaque, so ambiguous? For years, central bankers were an endangered species. Maintaining a low profile and passing the blame elsewhere were central bankers' survival toolkits. The story is told of a Chairman of the US Fed who made a courtesy call on his predecessor before taking up office. The predecessor handed the new Chairman three envelopes with the advice that whenever he found himself in trouble at work, he should open the envelopes but one at a time. Each would have advice on what to do. When the new Chairman found himself under attack, he opened the first envelope. It said: "Blame me". So, the new Chairman blamed the predecessor. After some time, the new Chairman came under attack again. He opened the second envelope. It said: "Blame the government." So he did that. After some more time passed, he came under attack again. So he opened the third envelope. It said: "prepare three envelopes." On a serious note, the mainstream view of the 1960s is encapsulated in this remark by Gardner Ackley, then Chairman of the Council of Advisors under Lyndon Johnson, the 36th president of the US: "I would do everything I could to reduce or eliminate the independence of the Federal Reserve"⁹. Today, all that is changed. Governments uphold the independence of the central bank.

⁹ Meltzer, A. (2005). "Origins of the Great Inflation." Federal Reserve Bank of Saint Louis, Review, March/April 87 (2, Part 2): 145-175.

Goals of Monetary Policy

Just before the pandemic and the war in Ukraine struck within a span of two years, the world was heralding the success of inflation targeting. Long-term inflation expectations were firmly anchored to targets; the flattening of the Phillips curve was an indication of the reduction in the variability of prices; and exchange rate passthrough to inflation was diminishing, de-emphasising the role of imported inflation. In spite of the global financial crisis (GFC), global inflation barely budged¹⁰. Some even regarded the GFC as a failure of inflation targeting because of its success – by ensuring low and stable prices of goods and services, arbitrage opportunities shifted to financial asset prices, causing the GFC. Today, inflation is at levels not seen in four decades, impervious to aggressive and front-loaded monetary policy tightening across the world. The existential question being asked is whether the world is permanently shifting from a low inflation environment to a high inflation one. The time has come to review the objectives of monetary policy.

Walter Bagehot's central bank had one objective: "lending freely against good collateral at a penalty rate"¹¹. Being the lender of the last resort was its only function so as to avert financial panics and confidence runs. Thus, central banks came into existence to secure and preserve financial stability. Scratch a central banker and underneath the skin, this age-old commitment to financial stability is always revealed.

¹⁰ Inflation Targeting: A Victim of Its Own Success? by Christian Gillitzer and John Simon, Research Discussion Paper 2015, Reserve Bank of Australia.

¹¹ Lombard Street: A Description of the Money Market, 1873 is regarded as among the earliest writings on central banking, "A panic, in a word, is a species of neuralgia, and according to the rules of science you must not starve it. The holders of the cash reserve must be ready not only to keep it for their own liabilities, but to advance it most freely for the liabilities of others. They must lend to merchants, to minor bankers, to 'this man and that man,' whenever the security is good. In wild periods of alarm, one failure makes many, and the best way to prevent the derivative failures is to arrest the primary failure which causes them".

The goal of price stability is essentially born out of the Great Inflation of the 1970s. It emerges from that experience or at least from an interpretation of it that low inflation maximises welfare because it is a necessary condition for sustained growth, and that dedicated institutions like the central bank can achieve that goal if they are allowed to operate free of pressure groups and vested interests. By the 1990s, numerical targets were being assigned to the inflation objective.

Yet, it is well known among economists and monetary policy makers, at least today, that on its own, monetary policy cannot influence the long-run growth of the economy, the so-called long-run neutrality of money. Monetary policy can at best create congenial conditions for other policies to influence the growth rate. Yet, almost every central bank has a dual mandate – growth/employment objective is always tagged on despite all the arguments to the contrary that I alluded to earlier. Is this growth objective reflecting the age-old mandate of financial stability? Naturally, numerical targets for the growth objective are not generally assigned.

What do the economists say, since their tribe so densely populates the monetary policy space? Unfortunately, they speak as always in several tongues. Up to the 1970s, the dominant Keynesian revolution and its mutations upheld an empirical regularity discovered in 1958 between wages and unemployment – the Phillips curve¹². By raising wages, employment and hence GDP can be increased, but the wage increase causes inflation to rise. Soon wage earners realise that the increase in wages has been eroded by inflation. So they demand even higher

wages. A wage-price spiral sets in that starts eating away at profit margins. Producers realise that there is no point in expanding production with losses. So, eventually, GDP slows and contracts. Yet, central banks of that time played a game with the economy. They were willing to trade a little more inflation for a little less unemployment (little higher growth) by printing money, hoping to fool other economic agents. The disastrous experience of the 1970s showed that it was a game in which everyone lost. Today central bankers have stopped playing that game. Be that as it may, this brought to the fore the views of another set of economists – the Chicago school, prominently represented by Milton Friedman and Robert Lucas Jr. – which argued that you can't fool the public through misinformation about the short run Philips Curve. Less unemployment (higher growth) today will inevitably result in higher inflation later and higher unemployment (lower growth) down the line. Monetary policy should play a passive, rule-based role and avoid unpleasant monetary surprises of trying to squeeze out a little higher growth by tolerating higher inflation.

As I stated earlier, there is no point turning to economists for advice. Their answers are going to be as ambiguous as the uncertainty that characterises the conduct of monetary policy. It is said that there are two fundamental laws of economics. The first law is: for every economist, there exists an equal and opposite economist. The second law: they are both wrong. Perhaps the dual mandate of monetary policy is intended to keep this two-handed tribe busy.

Even if the dual mandate is taken as *fait accompli*, let us evaluate its operational feasibility. At any point in time, the goal variables of inflation and growth are not visible to the monetary policy maker – inflation data are at least one month old, and those on GDP are at least three months old. Forecasts can be made in to the future, but they are based on backward looking information of one to three months ago, as I explained earlier, and they can be thrown off course

¹² Phillips, A. W. H. (1958). The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957. *Economica*, 25(100): 283–99: Phillips curve identifies an inverse correlation between unemployment and wage growth – unemployment can be lowered (output can be increased) but only at the cost of higher wages (inflation) or conversely, wage growth (inflation) can be lowered only at the cost of higher unemployment (lower output).

by unanticipated shocks that hit them in the future. Furthermore, the goal variables are moving over time and so monetary policy maker has to take in to account not their known positions but their uncertain future trajectory. Then they have to shoot forward – getting the angle right is crucial to taking the shot. In this challenging situation, monetary policy makers sift through an ocean of information – high frequency indicators; forward looking surveys; expectations of market participants, professional forecasters and analysts; econometric models; sentiment analysis based on artificial intelligence and machine learning techniques; all as a part of trying to guess the likely future path of the goal variables. Essentially, it is like monitoring a radar screen and using accumulated knowledge to distinguish between friendly configurations and hostile formations. This is then fed into setting the trajectory of the instruments so that the probability of hitting the moving goal variable is maximised, though success is far from assured. If they succeed, it is treated as business as usual and it goes unnoticed; if they fail, they are censured and burnt at the stakes.

A further complexity added to their tightrope walking is that goal variables are subject to revisions between the release of first advance estimates to provisional estimates to revised estimates to final accounts. Consequently, the monetary policy decision, which is taken at the time of the receipt of the first data release, become questionable about its integrity because of frequent revisions. In this context, a remark made by Ben Bernanke in the FOMC and reported in published transcripts is sobering: "I have a modest proposal, which is that if the BEA (US Bureau of Economic Analysis) can restate GDP figures and if firms can restate their earnings then the FED should have the option to go back and restate interest rates from last time (last meeting of the FOMC) [laughter]"¹³.

¹³ Federal Reserve (2008), Transcript of the Federal Open Market Committee Meeting on August 13, 2002.

Please note the word 'laughter' in square brackets. It is the manner in which the FOMC transcripts indicate the elicitation of humor during discussions in its meetings. I will address this issue in some detail presently.

The Decision

Today the world over, the monetary policy decision is taken by a committee of appointed officials. Deliberations among committee members leads up to a vote and the decision is taken by means of a majority vote. A vast literature already exists that seeks to explain the end product of the committee's meeting – the policy outcome. Here, I take a step back and explore the manner in which committee members think and deliberate in order to arrive at their judgment.

In a must-read speech titled *The Logic of Monetary Policy*¹⁴, Ben Bernanke draws the analogy of the economy as an automobile, the Committee as the driver, and monetary policy actions as taps on the accelerator or brake. When the economy is running too slowly – growth is below potential – the Committee increases pressure on the accelerator by lowering the policy rate, thereby stimulating economic activity. When the economy is running too quickly, the Committee presses down on the brake by raising the policy rate. In real life, in view of the severe informational constraints that the Committee faces – data coverage, frequent revisions, lags – the driver cannot determine the speed of the automobile. The road ahead is also not visible – forecasts are vulnerable to unanticipated shocks in the future. Hence, the monetary policy committee is like driving a car with an unreliable speedometer, a foggy windshield, and the car responds to the accelerator or the brake with some delay (Bernanke, 2004). In sum, 'not a vehicle for inexperienced drivers' is the way in which Bernanke describes the monetary policy committee.

¹⁴ Remarks by Governor Ben Bernanke before the National Economists Club, Washington D.C. December 2, 2004.

Turning to the deliberations of monetary policy committees, I would recommend a paper that models these discussions on the basis of verbatim transcripts of the meetings released to the public. It is titled "What's So Funny About Making Monetary Policy?"¹⁵ These transcripts reveal that a member's statement is sometimes followed by "[Laughter]". Is there any association between the number of laughs elicited by a member during a meeting, on one hand, and the member's expectations about the macroeconomy? If the elicitation of laughter has a small probability – monetary policymakers say many things, but only few of them are funny – then, by the "law of rare events," it will approximately follow a Poisson distribution with an exponential conditional mean function. To control for the possibility that some members may elicit more laughter than others because of their sunny disposition, the model includes member-specific fixed effects. Meeting-specific fixed effects are also included in order to control for the possibility that more laughter is elicited because of things like sunny weather. The only other explanatory variables used by this study are macroeconomic forecasts made by members of the FOMC. The results show that a member elicits more laughter during a meeting if he or she expects relatively poor macroeconomic performance in the form of higher inflation or lower employment or slower growth. This is a finding of major significance. It transcends monetary policy and has profound sociological and psychological implications.

Communication

Let me turn to another important aspect of monetary policy making that has perhaps gained the maximum prominence in recent years. Central banks communicate freely and frankly on their policies. They are mobbed and often make headlines. Central

bank communication has become an independent subject in its own right to which papers, books and conferences are devoted. Modern central bankers consider it vital to communicate their decisions to the public in a lucid and unambiguous manner. Their understanding of central bank transparency and communication has changed dramatically. As it became increasingly clear that managing expectations is a central part of monetary policy, communication policy has risen in stature from a nuisance to a key instrument in the central banker's toolkit¹⁶.

Right up to the early 1990s, however, this was not the case. Constructive ambiguity is the description given to the manner in which central bankers communicated. In fact, it is in that context the term Fedspeak was coined, described as 'mumbling with great incoherence'¹⁷. It was believed that a language of purposeful obfuscation is much better than saying "No Comments" or "I can't or won't answer".

Today, central banks are acutely conscious that their actions taken at the very short end of the market spectrum have to be amplified to move the whole yield curve up or down. This is especially important when the policy rate has hit the zero lower bound. Thus, communication has morphed from a facilitator of monetary policy to a new policy instrument in its own right¹⁸. As Ben Bernanke puts it: "monetary policy is 98 per cent talk and only two per cent action"¹⁹.

¹⁶ Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence by Alan S. Blinder, Michael Ehrmann, Marcel Fratzscher, Jakob De Haan and David-Jan Jansen, ECB Working Paper series, 8No 98 / MAY 2008.

¹⁷ Testimony to a Senate Sub-Committee in 1987 reported in Geraats, P.M., The Mystique of Central Bank Speak, International Journal of Central Banking, 3 (1) (2007).

¹⁸ Blinder, Alan S. Through a Crystal Ball Darkly: The Future of Monetary Policy Communication, AEA Papers and Proceedings, 108:567-571, May 2018.

¹⁹ Bernanke, Ben S. 2015. "Inaugurating a New Blog." The Brookings Institution, March 30, 2015. <https://www.brookings.edu/blog/ben-bernanke/2015/03/30/inaugurating-a-new-blog/>

¹⁵ Capehart, Kevin W., 'What's so Funny About Making Monetary Policy?', Economic Inquiry, Vol. 51, No 4, October 2013.

There is a growing body of work on the new approach of textual analysis that is challenging economists and providing new insights into monetary policy decision making. In the RBI, we are conducting studies on our monetary policy communication by text processing the minutes of the MPC at multiple levels using text mining techniques. The preliminary findings are that the length of the minutes was higher during 2019 – presumably reflecting deliberations on rate cuts –, in periods following different waves of COVID-19 and after the start of the war in Ukraine. The minutes are fairly readable and readability levels²⁰ are consistently maintained. In the period following the war in Ukraine, sentiment deteriorated among both internal and external members.

Most recently, an aspect of communication that has caught the imagination of the public is the 'policy pivot' – deliver a 75 basis points rate hike and then, through subtle shifts in messaging, convince markets that dovishness will characterise the next monetary policy meeting²¹. An example is the post-council meeting conference of the ECB. In its statement, there was a subtle change of tone. A similar pivot is evident in Chair Powell's press conference on November 2 after delivering a 75 basis points rate hike²².

Conclusion

Monetary policy has been termed as an art, a science and a craft. Yet, at its core, it is all about informed human judgment constrained by high uncertainty, which cannot be replaced by mechanistic models or rules. Much of what goes into the monetary policy decision evolves from the deliberations that monetary policy makers have with each other, with the public and from feedback. All these processes inherently imbue the lighter side of life. A psychological explanation of this phenomenon is that monetary policy makers are trying hard to cope with the stress of a perceived threat to the economy, as I mentioned earlier. This suggests that they need to have a sense of humour in order to stay sane. An "inflation nutter" who is strongly averse to inflation might go nuts if he or she expected higher inflation but did not have a sense of humour. Also, monetary policymakers may simply have better jokes about bad outcomes than anyone else, especially inflationary outcomes. Again, humour may be a coping mechanism. In closing, I will submit that humour in monetary policy making reflects serious concerns about the economy, rather than any lack of concern or sense of complacency that Paul Krugman misreads.

Thank you.

²⁰ Readability is estimated based on word size and length of sentences. Smaller words and shorter sentences tend to enhance the readability.

²¹ Martin, A., 'ECB Convinces Markets it is About to Turn More Dovish', Financial Times, October 28, 2022

²² "...at some point it will become appropriate to slow the pace of increases. So that time is coming, and it may come as soon as the next meeting or the one after that" – Remarks by Jerome H. Powell, Chair Board of Governors of the Federal Reserve System on 'Monetary Policy and Price Stability' at "Reassessing Constraints on the Economy and Policy," an economic policy symposium sponsored by the Federal Reserve Bank of Kansas City Jackson Hole, Wyoming, August 26, 2022.

*Financial Benchmarks in India: A Coming of Age**

T. Rabi Sankar

Smt. Usha Thorat, Chairperson, FBIL, Shri R.N. Kar, CEO, FBIL, distinguished speakers, colleagues and friends. It is a pleasure to be speaking today at the annual dinner of the Financial Benchmarks India Limited. Over the last decade, following the LIBOR problems, international attention to reform financial benchmarks has been a major component of the post-GFC regulatory overhaul of financial systems. Today, as we stand in the final stages of transition away from LIBOR towards alternative benchmarks, is an opportune moment to look back at the reforms undertaken in financial benchmark administration in India and assess the progress.

Introduction

Financial benchmarks, used as a reference for pricing, valuation and settlement of financial instruments, are a key driver of price integrity of financial markets. From deciding the interest rate on a retail loan to determining the pay-off in a complex derivative, financial benchmarks are ubiquitous and deeply embedded in financial systems. By promoting standardisation, they facilitate liquidity in markets thereby lowering transactions costs. Robust benchmarks promote financial stability by improving transparency in pricing and reducing information asymmetry. Use of benchmarks in valuation helps ascertain the fair value of a financial instrument and incentivises trading in the instrument. Financial benchmarks also facilitate monetary policy

transmission and help assess the efficacy of such transmission.

Well-designed, robust benchmarks that are reliable and resistant to manipulation are critical for the stability of the financial system. In a sense, financial benchmarks can be seen as a public good. The BIS, in a 2013 report titled *'Towards better reference rate practices: a central bank perspective'*¹ highlighted reliability, robustness, frequency, ready availability and representativeness as the desirable features of a benchmark. Reliability is based on governance standards and administration to protect from manipulation and errors; robustness relates to maintaining integrity even during episodes of market stress; proper frequency provides stability as well as relevance; representativeness implies that the benchmark is rooted in appropriate prices; and ready availability facilitates ease of pricing and contract verification.

All these above features contribute to standardisation and comparability across markets with diverse instruments, participants, location and venues. Critical to the emergence of financial benchmarks and their use is credibility and trust that the benchmarks accurately reflect the price of the referenced financial instrument. The core issue at the loss of trust in the LIBOR lay in its measurement methodology - the fact that it relied on estimates - as well as the inadequacy of its governance framework. This triggered a series of reforms aimed primarily at changing reliance to actual traded prices and improving the integrity of benchmark administration. The resultant International Organisation of Securities Commissions (IOSCO) Principles for Financial Benchmarks are today the overarching framework for ensuring best practices for benchmark administrators and submitters.

* Speech delivered by Shri T. Rabi Sankar, Deputy Governor, Reserve Bank of India on November 28, 2022 at a seminar organised by Financial Benchmarks India Private Limited (FBIL) in Mumbai. Inputs from Dimple Bhandia, Chief General Manager, Shri Saswat Mahapatra, General Manager and Shri Rituraj, Assistant General Manager of RBI's Financial Markets Regulation Department are gratefully acknowledged.

¹ <https://www.bis.org/publ/othp19.htm>

Financial Benchmarks – The Indian experience so far

In the backdrop of the global developments, the Reserve Bank constituted a committee in 2013 chaired by Shri P. Vijaya Bhaskar, then Executive Director to recommend sturdy practices for financial benchmarks. The Committee made several important recommendations including creating an independent structure, separate from FIMMDA and FEDAI, the then benchmark administrators for the Indian Rupee interest rates and Forex benchmarks respectively, for administration of the benchmarks. This, as we all know, led to the formation of FBIL.

The Committee also recommended that benchmark administrators be subject to regulatory oversight. In 2019, the Reserve Bank issued the Directions on Financial Benchmark Administrators putting in place a regulatory framework for benchmark administrators in the markets regulated by it. These Directions apply to 'significant benchmarks' taking into consideration their use, efficiency and relevance in domestic financial markets, while providing flexibility to the administrators with regard to other benchmarks and to facilitate development of newer benchmarks. The Directions set out the requirements for, *inter alia*, overall responsibilities of benchmark administrators as well as the framework for governance, controls and accountability in the benchmark administration process.

RBI has notified the list of significant benchmarks in these markets and put in place an oversight framework for the administrators of significant benchmarks. Several enhancements have been carried out to the benchmark computation and administration process by FBIL since its inception.

FBIL played a pivotal role in modifying existing benchmarks to conform to global standards. For example, the Mumbai Interbank Outright Rate (MIBOR), first introduced by the National Stock Exchange (NSE) in 1998 and computed through a

polling process, is now based on actual transactions. The Mumbai Interbank Forward Outright Rate (MIFOR) has been transformed into the Modified MIFOR using the alternate reference rate, secured overnight financing rate (SOFR) instead of LIBOR in line with the global transition away from the LIBOR. Modified MIFOR is now being used for all new contracts. New benchmarks have also been introduced in various market segments *viz.*, Market Repo Overnight Rate (MROR), T-bill rate and certificate of deposit (CD) rate.

Indian financial markets have witnessed substantial growth in the last few years, facilitated, in part, by the availability of robust benchmarks. The MIBOR benchmark is the underlying reference rate for MIBOR overnight indexed swap (OIS) contracts. The open interest has increased from ₹19 lakh crore in FY 2017 to ₹77 lakh crore in current FY 2023. There is also a growing offshore market for MIBOR based OIS (ND-OIS). In the currency market, the USD-INR Reference Rate is used by many domestic users, including corporates. The reference rate is used for settlement of non-deliverable forwards (NDFs) and exchange-traded futures as well. The average daily turnover in INR NDFs has increased from around US\$16.4 billion in 2016 to US\$ 46.4 billion in 2022. During the same period, the average daily turnover in exchange traded currency futures in India increased from US\$ 2.8 billion to US\$ 6.6 billion. As markets have grown, the pool of assets using FBIL benchmark rates for valuation has also grown.

An ideal benchmark is one which is anchored in observable transactions in a liquid market with a diverse set of participants and which remains robust in the face of market disruption and minimises scope for market manipulation. But the realities of many markets – globally and in India – are far from this utopian world. The reforms associated with benchmarks over the last several years have, therefore, focussed on effectively addressing the shortcomings

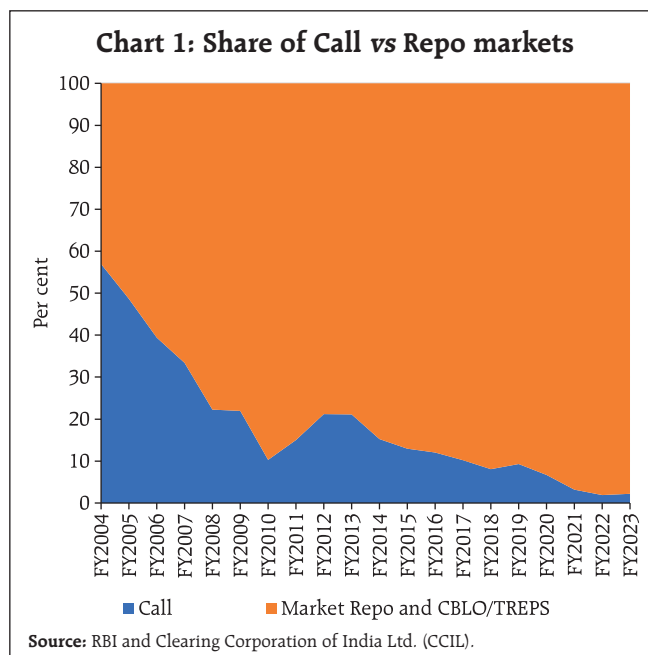
in benchmark design and the absence of robust governance processes that contributed to past abuses and in instilling confidence in financial benchmarks through reforms in benchmark governance, design, quality and accountability mechanisms.

Challenges with benchmark administration

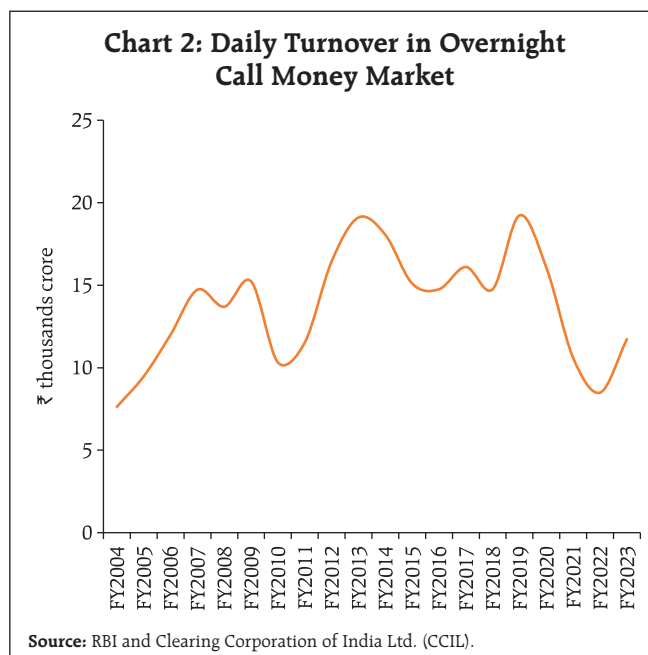
All benchmarks are susceptible to weaknesses arising from the non-zero probability of errors of omission and commission, the liquidity and diversification of underlying markets, technology induced changes in market microstructure, *etc.* There is a need for constant vigilance on all these fronts even in the most liquid of markets. The need for vigilance is stronger still in case of benchmarks in less liquid / illiquid markets where benchmarks are based on polling and / or model-based rates. In the rest of my speech, I will dwell upon some specific features of financial markets in India which can pose challenges for effective benchmark development and administration and which we will all need to be cognisant and watchful about.

Money markets

Consider the overnight money market in India. In the call money market - used for the calculation of MIBOR benchmark - non-banks were phased out beginning from 2001. Prudential limits on borrowing and lending in the call money market by banks and primary dealers were also put in place in 2002. Synchronous with this, the repo markets were developed and repo in government securities (g-secs) witnessed robust growth in line with global trends towards collateralised overnight markets. Amidst these developments, call money transaction volumes declined – both relative to repo markets, as well as in absolute terms. The share of call transactions in overnight money markets has gradually come down from more than 20 per cent in 2011-12 to below 2 per cent in 2022-23 (Chart 1). Meanwhile, daily turnover in the call money market declined from just over



₹19,000 crore at one stage and is currently at around ₹12,000 crore (Chart 2). The participant base in the market has also been shrinking.²



² Of course, such uneven distribution between collateralised and uncollateralised segments are also observed in other jurisdictions. For instance, in the overnight segment in US, the daily turnover in Secured Overnight Financing Rate (SOFR) is over 10 times the turnover in unsecured Fed Funds rate.

Now consider the use of the MIBOR. The benchmark is used in the OIS market. The MIBOR-OIS is the only liquid interest rate derivative market in our country (apart from MIFOR) with, as I mentioned earlier, an open interest of ₹77 lakh crore in the current financial year. The MIBOR is also the benchmark for INR OIS trades in the global markets (ND-OIS). I don't think I need to emphasise to this audience the importance of this benchmark and the need for constant vigilance in maintaining its robustness and reliability given dwindling transactions and shrinking participant base in the call money market.

While volumes in the call money market have been declining, the MIBOR benchmark continues to be determined based on actual transactions. Further, its integrity is ensured given the fact that the call money rate is the target rate for monetary policy transmission and participants in the market have access to the liquidity facilities of RBI. Among the other overnight benchmarks, the Market Repo Overnight Rate (MROR) is based on market repo transactions. Prima facie, this benchmark being based on transactions in a more liquid market and one with a wider participant base can normally be considered to be more robust. However, the benchmark is not based on pure inter-bank market that can take the place of MIBOR. Repo markets, while significantly larger, incorporate entities that do not have access to central bank liquidity and therefore their pricing is less robust than call rates for developing benchmark that tracks possible policy rate actions.

In the term money market, FBIL is publishing term MIBOR benchmarks. In the absence of a liquid term money market, these benchmarks are based on polled submissions. The development of the term money market remains elusive notwithstanding several reforms both from a regulatory and a liquidity management perspective. Most of the constraints have been addressed / removed in phases. The eligible participant base in term money markets has been

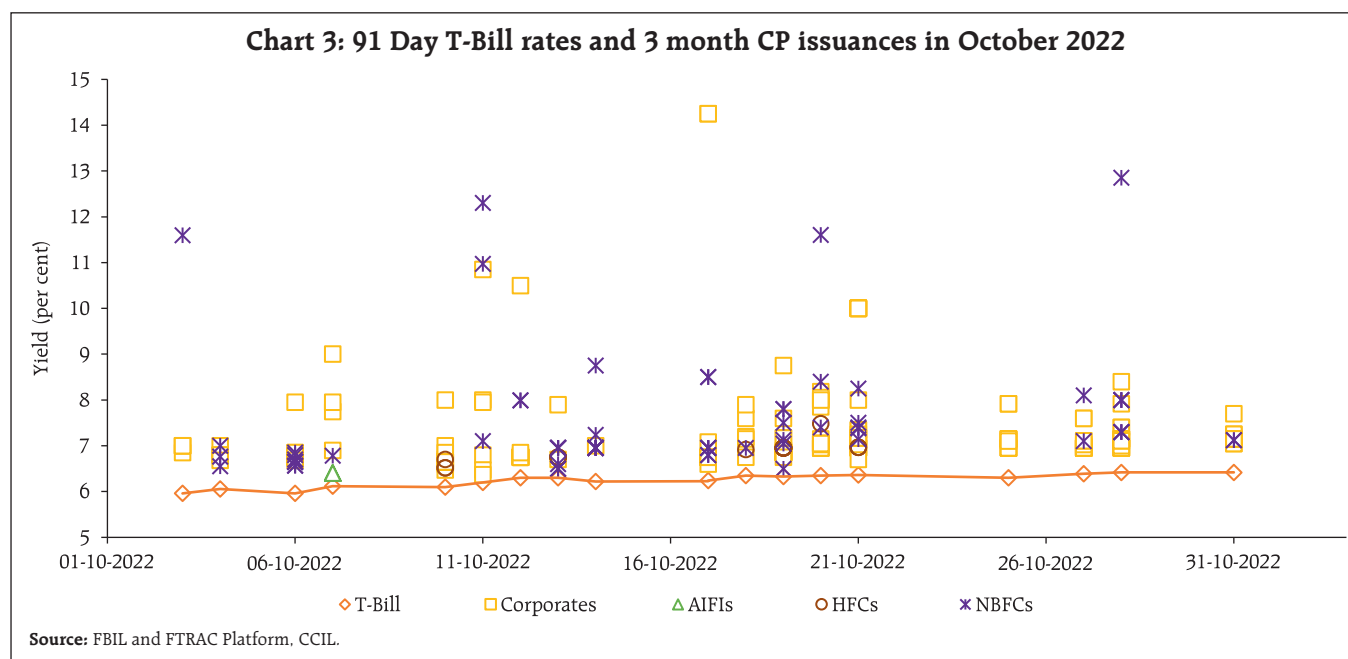
expanded. However, liquidity in the term money market remains negligible and the development of a robust term money benchmark curve remains a work in progress. Of course, these are issues not unique to India and are observed in peer nations as well. As LIBOR is getting phased out these problems are faced even by developed markets.

The other segments of the money market – the markets for treasury bills and CDs have witnessed impressive growth. But the growth has been driven by the size of primary issuances while the secondary markets continue to be characterised by low turnover. Here too, benchmark computation methodologies rely on statistical techniques. Instances of divergence between market prices and benchmark levels are, therefore, not uncommon. The end-quarter phenomenon that besets yields of T-bills and CDs, while not an infirmity of the benchmark *per se*, undermines their efficiency.

The commercial paper (CP) market has also grown on the back of primary issuances, but again, with low secondary market liquidity. Issuances of similarly rated credit that take place at very different rates display different market perceptions across types of issuers (*e.g.*, corporates and NBFCs) but even among the same type of issuers (Chart 3). This is perhaps one of the reasons why there are difficulties in developing and publishing a CP curve.

Debt markets

Moving on to debt markets, the liquidity situation improves in particular in the government securities market. Here too, as liquidity is concentrated in a few benchmark tenors, use of models to arrive at the benchmarks across all tenors becomes necessary. Given the importance of government securities yields as the benchmark for pricing of most financial assets, there is a need for a suitable methodology to ensure that the benchmark yield curve remains robust and reliable. Idiosyncratic factors pose challenges in the

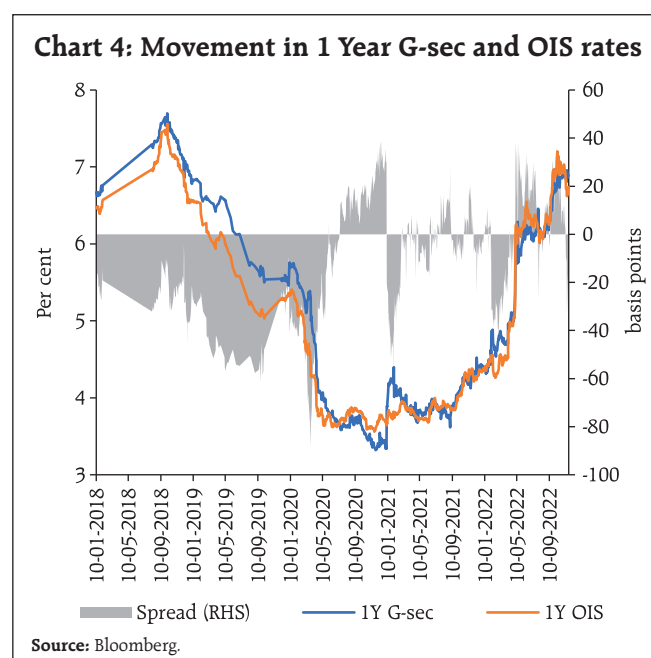


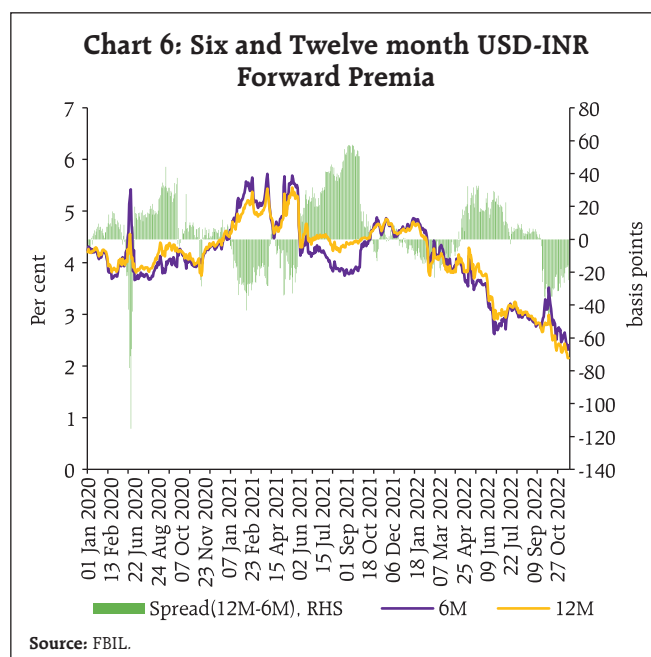
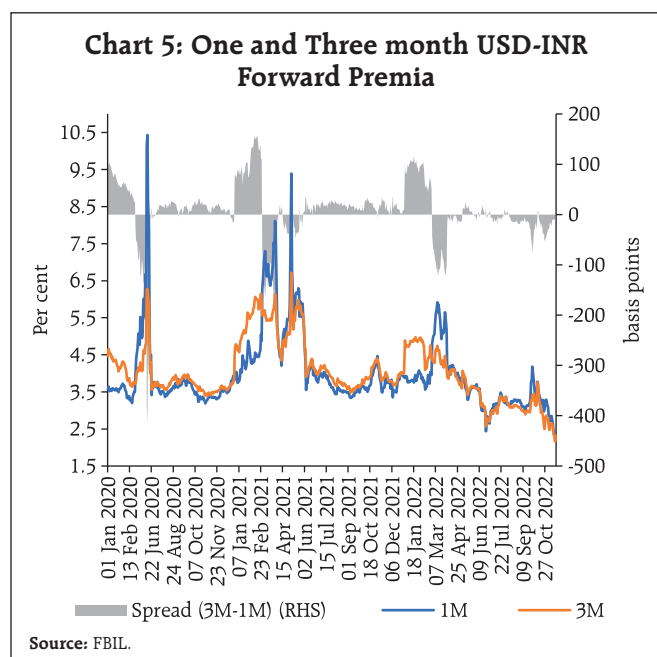
computation of benchmarks for State Government Securities (SGSs). Similarly, thin secondary market activity and lack of access to market for borrowers with lower credit rating make benchmarking rather unwieldy in the corporate bond market. All these factors reinforce the need for continuing efforts to evolve benchmarks that remain relevant and representative of the market conditions and risk perceptions of the underlying instruments.

Derivatives markets

A thriving derivatives market not only requires robust benchmarks, it can also facilitate further development of the underlying markets. Limited liquidity in derivative markets can therefore create distortions in benchmark values. For example, OIS rates, which generally remain below g-sec yields, have occasionally exceeded g-sec yields, impacted, in all probability, by non-residents' trading interest (Chart 4). Similarly, there have been episodes of negative spreads between near and far month forward premia (Charts 5 and 6). Such episodes can engender large basis risk and adversely impact the representativeness of benchmark rates.

MIBOR OIS is the only pure interest rate derivative product in the domestic markets that is characterised by good liquidity. While this product has well served the purpose of allowing market participants to express their view on the future movements in interest rates, its utility as a tool to enable users to hedge their interest rate risks remains limited. Globally, term money





market rates are generally used as the benchmark for interest rate swaps. In the domestic market too, there is a need for the development of term benchmarks which can be referenced by interest rate derivative products. This issue is becoming increasingly relevant with the recent push towards linking loan pricing to external benchmarks.

Key Issues to Address

Beyond trading interest, there is a need to develop robust benchmarks and products which meet the need of hedging asset side requirements of institutional investors such as banks but also liability side requirements of borrowers exposed to benchmark based interest rates on borrowings and loan pricing. While the lack of adequate liquidity in some instruments is the primary challenge, the reasons for the limited liquidity vary. Growing offshore interest in INR products has resulted in globalisation of domestic benchmarks. Discussed below are some of the issues that need attention to further the process of developing a robust benchmark framework in India.

- a. **Diversified participation** – A benchmark is as good as the price discovered in the referenced market. Efficient price discovery requires, on the one hand, the participation of investors with varying requirements and diversified trading strategies, and on the other, continuous price-making by market-makers. The post-GFC regulation has reduced the role banks traditionally played in market-making, even in developed markets. The degree of illiquidity seen in many traditionally liquid markets is partly explained by this development. In the case of India, the preponderance of buy-and-hold category of investors in the g-sec and corporate bond market (banks, insurance companies, pension funds, provident funds) aligns trading activity in one direction, leading to volatile overshoots. Such infirmities need to be addressed to achieve price efficiency, and consequently, robust benchmark. One way of diversifying participant base is to open the markets to the larger global investor base.

- b. Taxation, accounting and regulatory factors – One reason for the limited response to retail participation in g-sec market is that it is tax-inefficient compared to investing in mutual funds, as the latter provides benefits of indexation. Similarly, asymmetric accounting norms distort incentives for trading and may also induce inefficiencies to hedging activities. Certain regulations have the collateral effect of adversely affecting market liquidity. There should be coordinated efforts to address the unintended consequences of such taxation, accounting or regulatory requirements without undermining the basic objective of such policies.
- c. Segmentation of markets – Market segmentation fragments liquidity and leads to price differentials which erodes the efficacy of benchmarks. Seen in the context of the need for investor diversity, the fragmentation of Rupee markets between onshore and offshore warrants prioritised attention. Internationalisation of Rupee interest rate and currency markets holds the promise of wider investor base and global liquidity. To this end, measures enabling non-residents to undertake transactions with authorised dealer banks in India; providing Indian banks with access to offshore markets to undertake non-deliverable transactions *etc.*, have been taken. For the benefits to accrue to pricing (and therefore benchmarks) it is necessary that price impulses move freely from onshore to offshore and vice versa. Among other things, this may require linked and interoperable infrastructure, common market-makers across the segments and eventually a frictionless channel for investors to move from one market to the other. There is a strong case to work towards a long-term solution to this segmentation.
- d. Extra territoriality – A probably unintended consequence of the post-GFC drive towards de-risking OTC derivatives markets has been the tendency of developed economies to contain the risk of their entities by attempting to maintain control of regulation and risk management practices of third countries. Thus, for example, European banks may not be able to operate through Indian financial infrastructure entities (like CCPs, benchmark administrators, *etc.*), unless their home regulator accords "equivalence" treatment to the Indian infrastructure entities or these entities are endorsed or recognised. Such treatment involves ability to call for information, supervise, inspect and (at least potentially) impose penalty on Indian entities. This amounts to an unfortunate interference in the regulatory architecture in India, especially given the fact that these Indian entities meet relevant global standards, set by Committee on Payments and Market Infrastructures (CPMI)-IOSCO. Similar extra-jurisdictional overreach is hanging over FBIL as well. The potential disruption to forex markets, both onshore and NDF, can be rather serious. That such disruption flows from the action of regulators is not in alignment with the post-GFC global consensus on de-risking financial markets. All regulated entities understand the costs and constraints of compliance. It cannot be anyone's argument that replicating such obligations for every regulator in every jurisdiction is an efficient arrangement. A satisfactory solution to this impending complication needs to be found quickly.

As we all understand, a benchmark is as good as the underlying market. Developing good benchmarks is eventually dependent on developing deep and liquid financial markets, which is an ongoing and drawn-out process. Meanwhile, effort can focus on improving the integrity and credibility of the benchmark process. This requires achieving a balance between good statistical techniques and realistic subjective judgement, of both market participants in their role as submitters and benchmark

administrators. And above all, recognising that every system is in a process of constant evolution. While a transition from polled rates to actual traded rates is a justifiable trend in the post-GFC world, it may serve us well to remember that a traded price is stale, its pricing information is no longer relevant. Perhaps we would move towards a more relevant basis for benchmarks in the future. And that would require all of us to be constantly striving to create better benchmarks.

*Capacity Building in the Financial Sector in the face of Emerging Challenges**

M K Jain

Chairman Governing Board, NIBSCOM as well as other Governing Board Members, NIBSCOM; Director, NIBSCOM and Faculty Members of NIBSCOM; Eminent bankers, ladies and gentlemen. Good afternoon.

Thank you for inviting me to the Golden Jubilee celebration of this premier institution. Over the last 50 years the National Institute for Banking Studies and Corporate Management (NIBSCOM) has provided exemplary service to the banking industry by training several generations of bankers in operational and management aspects relating to banking and finance. I am given to understand that since inception, there have been around 2 lakh participants in its training programmes. Having started my banking career with Punjab National Bank, one of the sponsor banks of NIBSCOM, I am specially delighted to be here amongst you.

In addition to various statutory and regulatory requirements, banking also has certain time-honoured banking conventions and practices. These practical concepts are best understood by practitioners and therefore best taught by them too. Moreover, unlike other professions such as medical, legal or accounting where there are specific academic courses, bankers come from a wide variety of academic backgrounds and learn their craft on the job. Therefore, industry promoted capacity building institutions like NIBSCOM play a crucial role in developing and enhancing the skills of bankers. Apart from sharing

mutual experiences, this collaboration also helps in optimising training costs.

Recognising the importance of capacity building, the Reserve Bank has catalysed the establishment of several institutions, both for upskilling of its own staff as well as of the industry. These include Reserve Bank Staff College, College of Agricultural Banking (CAB), Indira Gandhi Institute of Development Research (IGIDR), Institute for Development and Research in Banking Technology (IDRBT), National Institute of Bank Management (NIBM), Indian Institute of Bank Management (IIBM), Centre for Advanced Financial Research and Learning (CAFRAL), RBI Academy and more recently College of Supervisors.

Today, I would like to talk to you about the learnings from the challenges faced by financial sector in the last decade, the emerging challenges and the importance of capacity building in this context.

A decade of challenges

The last decade has been exceptionally challenging for banks and financial institutions in India. In December 2011, the Financial Stability Report first highlighted the rising NPA levels. Subsequently, Central Repository of Information on Large Credits (CRILC), introduced in 2013 and AQR in 2015 revealed the scale of NPA problem. As the banking sector was working towards remedying the situation, the IL&FS default in 2018, revealed cracks in the liquidity management of NBFCs. This was followed by a spate of problematic episodes like DHFL, Punjab & Maharashtra Co-operative Bank, Yes Bank, LVB and ultimately the Covid-19 pandemic.

The Covid-19 pandemic is a watershed event of our generation for the widespread devastation of life and livelihood that it caused. It still haunts 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.

* Speech delivered by Shri M K Jain, Deputy Governor, Reserve Bank of India on December 2, 2022 at the Golden Jubilee celebration function of the National Institute for Banking Studies and Corporate Management (NIBSCOM) in Noida.

Before I continue, I would like to express my gratitude and appreciation for the bankers and RBI staff for their dedicated service during the pandemic. Even at the risk to their lives, bankers ensured that branches remain open and functional. Teams in the RBI and its regulated entities ensured availability of critical support infrastructure for payment settlement systems, ATMs, internet/ mobile banking, dealing with cyber security risks, address the customer grievances, *etc.* so that banking services continued uninterrupted.

As you all know, RBI's monetary policy mandate is to maintain price stability while keeping in mind the objective of growth. In response to the COVID-19 pandemic, the Monetary Policy Committee prioritised growth adopting an accommodative stance necessary to revive and sustain growth on a durable basis and mitigate the impact of COVID-19 on the economy. The RBI implemented a slew of measures, both conventional and unconventional, to address the pandemic-induced dislocations and constraints.

In terms of conventional measures, the policy repo rate was reduced significantly. Further, system-level liquidity was also enhanced through large-scale open market purchase operations and a one percentage point reduction in the cash reserve ratio. Unconventional measures such as long-term repo operations (LTRO), targeted long-term repo operations (TLTRO) and special open market operations (Operation Twist) were also conducted to support growth. Most importantly, the liquidity was closely monitored and to avoid falling into a liquidity trap, all the RBI liquidity measures came with sunset clauses.

The dislocations in everyday activity and access to finance brought to the fore solvency concerns across individuals, small and large businesses, and raised fears of impending asset quality stress among banks and financial institutions. The RBI responded with a volley of regulatory measures that included a loan moratorium, resolution frameworks 1.0 and 2.0 to

facilitate restructuring of viable but distressed loans, *etc.* RBI also deployed its macro-prudential toolkit using various counter-cyclical measures. Like liquidity, even here the RBI followed a calibrated approach with sunset clauses. For instance, the COVID resolution packages set out parameters to ensure that viable borrowers are benefited, and the dispensations are available only for a finite window. Meanwhile, banks were advised to raise capital and restrictions were placed on dividend payments in early days itself so as to conserve the capital of banks and improve their risk absorbing capacity.

Even before onset of the pandemic, RBI had used innovative ways in resolving distressed institutions without requiring infusion of tax-payer money, while safeguarding depositor interest. Instead of applying traditional template of merger of a weak bank with a strong domestic bank or Government bailing out a bank, innovative approaches were adopted. In the case of Yes Bank, a group of banks came together to infuse capital to revive the bank. In the case of Punjab and Maharashtra Co-operative Bank a market-based resolution through the expression of interest route was used. For, Lakshmi Vilas Bank, a foreign bank, *albeit* through wholly owned subsidiary¹ route, was allowed to acquire the operations.

Issues relating to governance, assurance and supervision were at the root cause of many of the problems. However, I believe that all stakeholders of financial sector, including Government, regulators and regulated entities have dealt with the challenges of last decade in a collaborative, calibrated and innovative manner. Overall, the financial sector and Reserve Bank have learnt and grown from these experiences - strengthening the institutional architecture, the regulatory framework as well as the financial system.

¹ As a locally incorporated bank, the wholly owned subsidiaries (WOS) are given near national treatment with some exceptions. Refer RBI Press Release November 6, 2013.

On the supervisory front several initiatives have been taken with the overarching vision of being able to provide a sound forward looking assessment of material risks. Improving offsite capabilities and making supervision more system and process driven. Illustratively, banks are required to have automated system-based asset classification with limited exceptions and tighter controls over such exceptions.

In October this year, RBI released Daksh, a web-based end-to-end workflow application that will *inter-alia* facilitate better monitoring of compliance by supervised entities. Offsite being data dependent, measures have been taken to strengthen the quality of data inputs. An endeavour is also being made to increase the use of advanced analytics, artificial intelligence and machine learning to assess material idiosyncratic and systemic risks so that risks can be proactively identified and mitigated. Use of such techniques opens up a range of possibilities especially in monitoring and analysing unstructured data such as board notes, complaints, analyst reports, news, social media, *etc.* to provide leads on emerging supervisory concerns.

While we are strengthening offsite with greater use of Sup-tech, the human element and onsite has not been forgotten. The College of Supervisors has devised a bouquet of programs that caters to capacity building at all levels from foundation course for new recruits to refresher programmes for supervisors. Further, a conscious attempt has been made to increase the two-way interactions with management of banks and financial institutions as well as statutory auditors to understand each other's perspective and gain an insight into various concerns.

These efforts are bearing fruit. Today, I am happy to note that the Indian banking sector is strong, stable and resilient poised to support economic growth.

Emerging Issues

While we have managed to restore our financial system to health, it is not the time to rest, as challenges

remain. Having discussed the challenges of the last decade, I would like to discuss three emerging issues, namely, (i) the risks spill over from global events, (ii) the paradigm shift in banking driven by technology and (iii) potential use of data.

A. Spill-over risks from global events

Events such as the Russia-Ukraine conflict reiterate the view that in today's inter-connected globalised economy, no one is insulated from seemingly isolated events in a distant land. India does not have many trade linkages or dependence upon Ukraine. However, we are bearing the second-order inflationary effects through various transmission channels and overall global slow down.

The Indian economy is emerging as one of the fastest growing economies and a bright spot in the global economy which is staring at recession. As per the IMF's latest World Economic Outlook² report, this is the weakest growth profile since 2001 except for the great recession and the acute phase of the COVID-19 pandemic. Consequently, there is nervousness in global financial markets with potential consequences for the real economy and financial stability.

Indian banks and financial institutions should strengthen their risk management capacities to monitor ongoing global events, quickly recognise their potential impact and proactively to mitigate and insulate themselves from any adverse consequences.

B. Technology

Technology is revolutionising the financial services industry and bringing a disruptive paradigm shift in the delivery of banking services. With the entry of technology companies, banking services are being bundled onto platforms and delivered

² 'World Economic Outlook, October 2022: Countering the Cost-of-Living Crisis', International Monetary Fund, October 11, 2022. <https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022> (last accessed on November 30, 2022).

through mobiles. Consumers have the convenience of accessing financial products across the entire spectrum of banking, capital markets, insurance and pension as well as non-financial products directly through their mobile phones. Very often this results in a blurring of the regulatory perimeter and jurisdiction boundaries.

It is not as if the financial services sector has been lagging behind in adopting new technologies. Products like mobile banking applications, retail electronic fund transfers, UPI, Aadhaar e-KYC, Bharat Bill Payment System, Scan & Pay, Digital Pre-paid Instruments, *etc.* have transformed traditional branch banking. From once being restricted by the banking hours, the customer today is offered a digital-mobile-anywhere-anytime banking experience. However, the pace of technological changes is so rapid that banks will have to continuously innovate to keep up.

While this technology revolution has certainly enhanced the efficiency of financial entities and resulted in significant improvement in doing business with banks, it has also posed new challenges. Several concerns emanate from the mushrooming of unregulated digital lending apps, crypto-currencies, cyber-attacks, *etc.*

Banks should view technology as an enabler to facilitate seamless customer service and harness it for the benefit of their customers. Let me share a recent example. Availing credit in rural and semi-urban areas can be very time-consuming since it is largely a paper-based process entailing cumbersome documentation with multiple visits to the branch by the applicant. Earlier this year, RBI in consultation with RBI Innovation Hub launched a pilot project on KCC loans to address these challenges through digitalisation of agri-finance. Through automation of various processes, access to digital land records, satellite images and API integration, the project envisages a paper-less and hassle-free process that will facilitate disbursements of loans without requiring to visit the branch. The pilot, presently running in select districts of Madhya

Pradesh and Tamil Nadu, is already showing a substantial reduction in turnaround time and cost.

In order to take advantage of the technology revolution, there are three things that banks must do from a capacity building perspective:

- a. Firstly, banks and financial institutions should be ready to scale up their investments in technology. In many cases, legacy core banking systems designed in the pre-mobile app era may not be amenable to swift changes in product design, computational capabilities, API integration, *etc.*
- b. Secondly, to build capacity, banks and financial institutions should foster continuous innovation. This is crucial in today's technology led dynamic environment. The financial sector will have to anticipate and prepare for potential future requirements.
- c. Thirdly, banks and financial institutions must collaborate to leverage technology and derive synergistic benefits for optimising costs, maximising revenues and enhancing customer experience. However, while doing so they should ensure data privacy and protection as well as addressing consumer grievances and protecting them from unfair practices.

C. Data

It is being said that data is the new oil. Like crude oil, raw data may not be valuable in itself. However, when consolidated and connected with other data and analysed, it can give meaningful insights. The financial sector by the inherent nature of its business has large repositories of customer and transaction data.

This presents itself with several exciting opportunities with applications across the spectrum of banking functions as well as facilitating better business strategies, fine tuning risk management

and offer banking services with enhanced customer experience. Collaborating and sharing data, subject to privacy considerations, magnifies the benefits exponentially. Indeed, the possibilities are endless. Apart from commercial considerations, there are positive implications for development too. For instance, data analytics can be used to do away with collateral and documentation requirements which can help credit reach the financially excluded.

Many banks and financial institutions are already taking initiatives in big data analytics. However, to fully exploit and harness the data, building capacities in technology, analytical abilities and most importantly human resources is required.

Human resources – a significant determinant

In addition to technology, the main differentiator for success is the quality human resources. With a dynamic and rapidly changing environment, the skill gap is widening. To address this, banks and financial institutions have to attract, train and retain talent. Further, there is a greater need for employees to be flexible, agile, open to new technologies and proactively pick up new skills to remain useful. Consequently, upskilling and reskilling of human resources is a *sine qua non* to face the emerging challenges. This is where capacity building will play a major role in the financial sector.

Capacity building is a wide overarching concept covering human resource development, organisational development and legal framework development. The objective is to bring about efficiency and effectiveness by improving the system's ability to deliver and perform at the optimum level.

Training is often the easiest and first place to start in capacity building. However, in order to derive its benefits and optimise its costs, careful consideration should be given to all the elements of capacity building. For instance, an officer may be trained in advanced quantitative techniques but if adequate resources

in the form of computing infrastructure and access to data are not provided, the training is rendered ineffective from a capacity building perspective. Therefore, for training to translate into capacity, banks and financial institution must ensure that the training is demand driven based on a training needs analysis and is gainfully utilised post the training.

Apart from training, the financial services sector must invest in research and be open to accepting and developing out-of-box ideas. Banks and financial institutions can consider in-house data science labs or sandbox environments to test out innovative ideas. Indeed, instead of banks following technology companies, the situation could be reversed with banks leading with novel technology solutions.

As I conclude, I would summarise my key message. The Indian financial sector is coming out of a challenging decade which saw several crises including the pandemic. Fortunately, it has learnt and grown from these experiences and is fairly sound and much more resilient today. However, there are existing and emerging challenges on the horizon which the sector needs to adequately prepare for. The solution lies in the effective management of human resources and upskilling and reskilling them to face these challenges that lie ahead. Bank managements should shun short-term considerations and invest in their people realising that the long-term benefits of capacity building far outweigh the immediate costs. Institutions such as NIBSCOM can go a long way in optimally delivering on the training components of capacity building in areas such as risk management, technology and data analytics, while also nurturing research and innovation. I would encourage NIBSCOM to take up innovative research topics.

With this I wish NIBSCOM and its faculty all success in their future endeavours and many glorious years ahead. Thank you once again for inviting me to be a part of your Golden Jubilee Celebrations.

ARTICLES

State of the Economy

Anatomy of Inflation's Ascent in India

Assessing Inflation Expectations Adjusting for Households' Biases

Government Finances 2022-23: A Half-Yearly Review

Measuring India's Digital Economy

A Composite Coincident Index for Unorganised Sector Activity in India

Agriculture in 2022-23: Kharif Performance and Rabi outlook

Financial Inclusion through Microfinance – An Assessment of the
North-eastern Region of India

State of the Economy*

The balance of risks is increasingly tilted towards a darkening global outlook and emerging market economies (EMEs) appear to be more vulnerable, even though incoming data suggest that global inflation may have peaked. The near-term growth outlook for the Indian economy is supported by domestic drivers as reflected in trends in high frequency indicators. Equity markets touched a string of new highs during November buoyed by strong portfolio flows to India. Headline inflation moderated by 90 basis points to 5.9 per cent in November driven by a fall in vegetables prices even as core inflation remained steady at 6 per cent. Waning input cost pressures, still buoyant corporate sales and turn-up in investments in fixed assets are heralding the beginning of an upturn in the capex cycle in India which will contribute to a speeding up of growth momentum in the Indian economy.

Introduction

A burst of volatility - most recently sparked by tough talk from central banks - is igniting global financial markets into front-running underlying economic activity. In several parts of the world, inflation is recoiling, although it is still hooded and ready to strike. Energy prices have plummeted to pre-Ukraine war lows (but energy stocks are rising!); supply chains are disentangling; ports are decongesting; and there is a glut of chips and semi-conductors. Several economies have recorded expansion in the July-September quarter, shrugging off contractions in preceding quarters, and dispelling doomsday

predictions of imminent recessions. High frequency indicators reflect strong labour markets and consumer spending in October-November. These developments have led to the resurgence of the 'short and shallow' view¹ regarding global recession and the fear that the complacency associated with 'team transitory' may be returning.

Inflation may be slightly down, but it is certainly not out. If anything, it has broadened and become stubborn, especially at its core. An unease hangs over energy prices: for now, OPEC plus stayed its hand in cutting production, but an oil price cap threatens to unleash disruptive financial forces, with hedge funds already cutting net long positions in crude contracts. Despite moderation in global commodity markets, climate change and the war in Ukraine are set to keep food prices at higher than pre-pandemic levels. Central banks may have moderated the pace of monetary policy tightening or hinted at it, but they are in no mood to ease off in their fight against inflation. Disinflation is about to become painful. Financial conditions, and especially borrowing costs, are biting into discretionary consumer spending and housing demand, and stalling investment in new capacity creation.

With every passing day, the balance of risks gets increasingly tilted towards a darkening global outlook for 2023, the year that will bear the brunt of monetary policy actions of this year. Emerging market economies (EMEs) appear even more vulnerable, having battled currency depreciations and capital outflows in addition to slowing growth and high inflation. Debt distress is rising, with a surge in default rates and an appreciating US dollar – the principal currency in which debt is denominated – although more recently it has tumbled down from 20-year highs. Looking beyond, a mild recovery is projected to get underway in most countries in 2024. Emerging Asia will likely become the world's engine of growth, collectively accounting for close to three-quarters of global growth in 2023 and around three-fifths in 2024.

* This article has been prepared by G. V. Nadhanael, Shahbaaz Khan, Madhuresh Kumar, Kunal Priyadarshi, Garima Wahi, Jessica Maria Anthony, Pankaj Kumar, Gautam, Monika Sethi, Anoop K Suresh, D. Suganthi, Rohan Bansal, Kovuri Akash Yadav, Priyanka Sachdeva, Pratibha Kedia, Avnish Kumar, Amit Pawar, Jitendra Sokal, Ashish Santosh Khobragade, Sasanka Sekhar Maiti, Vineet Kumar Srivastava, Samir Ranjan Behera, Deba Prasad Rath and Michael Debabrata Patra. Views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

¹ Mohamed El-Erian, The Consensus Forecast on Recession Risks Complacency, Financial Times, November 22, 2022.

Among other important global developments, the world's population crossed 8 billion in the middle of November and would reach 9 billion by 2037, but driven by older people – the number of people aged 65 and over is expected to rise from 783 million in 2022 to 1.4 billion by 2043. In contrast, the share of people aged 15 to 64 – the working age population – is falling. The global fertility rate has halved since the 1950s to 2.3 births per woman. Ageing is the most important demographic change of this century.

Fossil fuel disruptions have provided a boost for renewables. According to the International Energy Agency, renewables are seen to be growing by almost 2,400 gigawatts (GW) over the next five years, accounting for over 90 per cent of global electricity capacity expansion. This is being mainly driven by the United States, the European Union, China and India, which are all implementing supportive policies and regulatory and market reforms. Solar photovoltaic (PV) manufacturing investment in India and the United States is expected to reach almost US\$ 25 billion over 2022-2027, a sevenfold increase compared with the last five years. India's production linked Incentives (PLI) initiative closes nearly 80 per cent of manufacturers' investment cost gap with the lowest-cost manufacturers in China. The United States, Canada, Brazil, Indonesia and India make up 80 per cent of global expansion in biofuel use, as all five countries have comprehensive policy packages that support growth.

With the addition of 145 GW, India is forecast to almost double its renewable power capacity over 2022-2027. Solar PV accounts for three-quarters of this growth, followed by onshore wind with 15 per cent and hydropower providing almost all the rest. The overarching drivers of renewable energy growth are India's targets of 500 GW of non-fossil installed capacity by 2030 and net zero emissions by 2070, ensuring long-term viability for renewable energy developers.

On this note, we turn to developments in India during the month gone by. On December 7, 2022 the monetary policy committee (MPC) delivered a 'policy pivot'. After three consecutive policy rate increases of 50 basis points each, the pace of increase was moderated to 35 basis points in response to a modest downward shift in the projected trajectory of inflation, a dip in inflation expectations and indications that the economy's resilience and growth foundations are improving. Seeing pressure points in some categories of food, and persistence and generalisation across the core constituent, however, the MPC decided that further withdrawal of accommodation is warranted "to keep inflation expectations anchored, break the core inflation persistence and contain second round effects, so as to strengthen medium-term growth prospects."² The stance of monetary policy has been summarised pithily in Governor Shri Shaktikanta Das's statement: "While being watchful of the impact of our earlier monetary policy actions, we will keep Arjuna's eye on the evolving inflation dynamics and be ready to act as may be necessary. Our actions will be nimble and in the best interest of the economy." If the projections set out in the resolution hold, then perhaps India is poised to achieve the first milestone in its price stability objective – bringing headline inflation enduringly into the tolerance band during 2023-24. Yet, with inflation projected to turn up in the second quarter of next year, there can be no letting down of the guard. The moderation in the size of the policy rate change also provides the space to assess the cumulative impact of tightening undertaken so far on macroeconomic and financial conditions and outlook.

The Reserve Bank's projections of real GDP growth turned out to be spot-on with regard to the quarterly estimates for July-September 2022 released

² Monetary Policy Statement, 2022-23, Resolution of the Monetary Policy Committee (MPC) December 5-7, 2022.

by the National Statistical Office, with one unpleasant surprise. Input cost pass-through caused corporate expenditures to outpace revenues, resulting in a contraction in net profits and, hence, in industry's contribution to gross value added. With international and domestic input cost pressures showing signs of easing and with corporate sales growth still buoyant, it is expected that earnings will improve in subsequent quarters and contribute to a speeding up in the momentum of growth in the Indian economy. Furthermore, corporate balance sheets also reflected a turn-up in investments in fixed assets, heralding the modest beginning of an upturn in the capex cycle. Sensing these potential tailwinds, domestic financial markets have rallied and it is the capacity of Indian companies to turn the pick-up in economic activity into earnings growth that is offsetting investor caution on high valuations.

High frequency indicators suggest that domestic economic activity remained resilient in November and early December. The outlook for private consumption and investment is looking up, although relatively higher inflation in rural areas is muting spending in those regions. Net exports are restrained by the global slowdown. Agricultural and allied activities and contact-intensive services are leading the supply response, with industry on an uneven recovery. In response, capital flows to India are strengthening. Business and consumer confidence is turning up, and expectations of a better second half of 2022-23 relative to the first half are being reflected in forward-looking surveys.

India's resilience in the face of deteriorating external environment has been acknowledged elsewhere too³. The near-term outlook for the economy has been upgraded (see Section III), supported by domestic drivers. Overall domestic conditions are becoming conducive for a turnaround

in private investment, and if inflation ebbs, private consumption will continue to firm up. In the World Bank's view, "India's exports are susceptible to a global growth slowdown and...the confluence of multiple challenges on the external front poses a challenge to India's growth trajectory, but balanced policymaking, which factors in these trade-offs, will help India navigate global headwinds."

There is a growing sense that the coming decade will mark India's ascent on to the world stage. It is in this context that India's priorities and deliverables under its G20 presidency assume relevance. Reinvigoration of global policy cooperation to meet emerging challenges, and repairing the multiple fractures can position the global economy on a trajectory that fulfils the G20's mandate of strong, sustainable, balanced and inclusive growth.

Set against this backdrop, the remainder of the article is structured into four sections. Section II covers the rapidly evolving developments in the global economy. An assessment of domestic macroeconomic conditions is set out in Section III. Section IV encapsulates the financial conditions in India, while the last Section sets out concluding remarks.

II. Global Setting











As we near the end of a tumultuous 2022, the outlook is overcast for 2023 with indications of weaker global growth, fraught with downside risks. Inflation is likely to moderate in 2023 from current levels, but it would remain well above targets in most economies. In its latest Economic Outlook released on November 22, 2022 the Organisation for Economic Co-operation and Development (OECD) has pegged global growth for 2023 at 90 basis points below the forecast for 2022. (Table 1).

Incoming data suggest that global inflation may have peaked. Both producer price index (PPI) and consumer price index (CPI) based measures of inflation are cooling down in various economies,

³ World Bank, India Development Update; December 06, 2022.

**Table 1: GDP Growth Projections –
Select AEs and EMEs**

(Per cent)

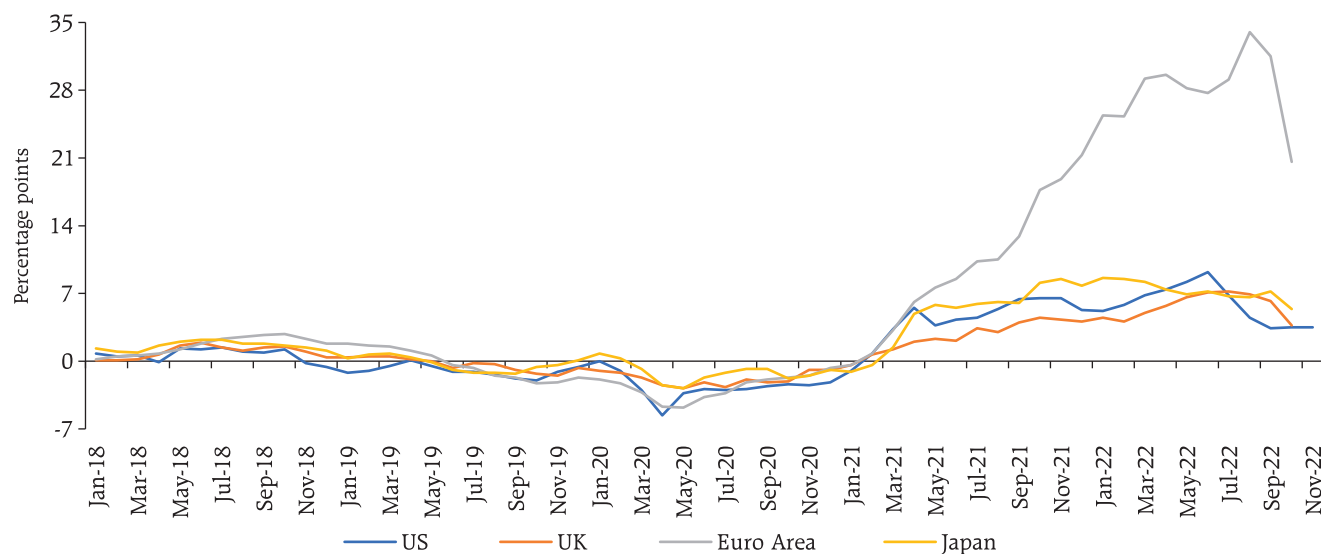
Month of projection → Country / Region ↓	2022		2023	
	November 2022	September 2022	November 2023	September 2023
 World	3.1	3.0	2.2	2.2
Advanced Economies				
 US	1.8	1.5	0.5	0.5
 UK	4.4	3.4	-0.4	0.0
 Euro area	3.3	3.1	0.5	0.3
 Japan	1.6	1.6	1.8	1.4
Emerging Market Economies				
 Brazil	2.8	2.5	1.2	0.8
 Russia	-3.9	-5.5	-5.6	-4.5
 India	6.6	6.9	5.7	5.7
 China	3.3	3.2	4.6	4.7
 South Africa	1.7	1.7	1.1	1.1

Source: OECD.

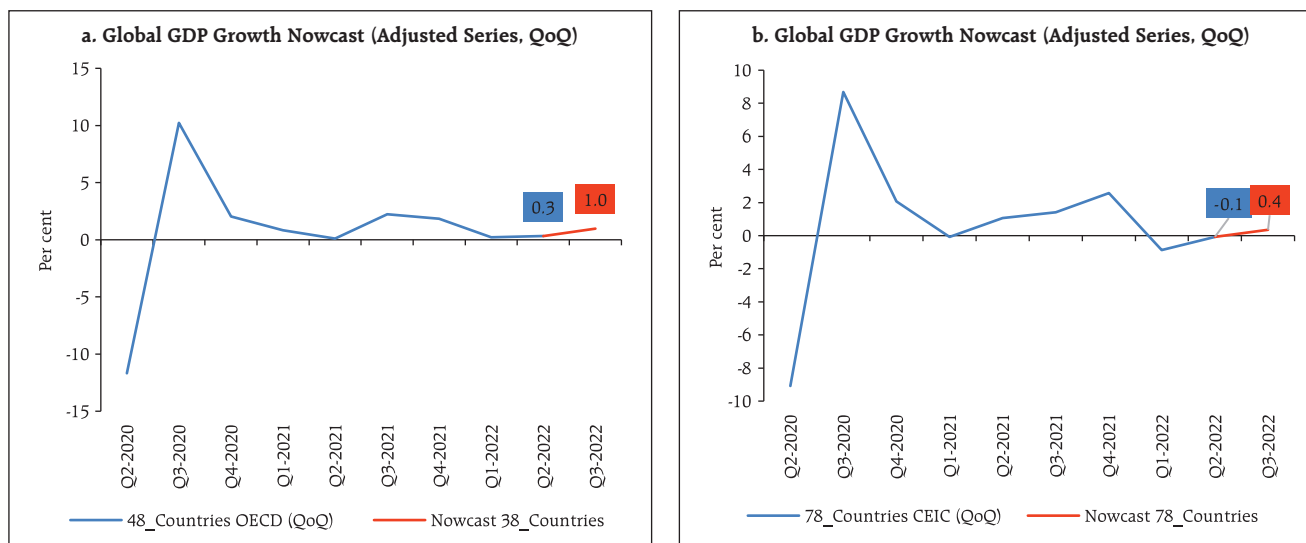
with a narrowing of the wedge between the two (Chart 1). The OECD has projected that CPI inflation in the G20 economies is set to ease to 6.0 per cent from 8.1 per cent in 2022. Geopolitical risks as well as tight supply demand balance in key commodities impart considerable uncertainty to the outlook.

Nonetheless, expectations of a slower pace of monetary tightening have gained ground, lifting global stock and bond prices while restraining the US dollar's rally. Against this backdrop, our model-based nowcast using all available GDP releases indicates that global GDP growth gathered some momentum in Q3:2022 after sequential contractions in preceding quarters (Chart 2).

Among high frequency indicators, the global composite purchasing managers' index (PMI) signalled a downturn for the fourth consecutive month in November, hitting a 29-month low. Both manufacturing output and service sector business activity fell at the fastest rate since June 2020. The global manufacturing PMI touched a 29-month low of 48.8 in November, remaining in contraction for the

Chart 1: Wedge between PPI and CPI based Measures of Inflation

Sources: Bloomberg; and RBI staff estimates.

Chart 2: Global GDP Nowcast

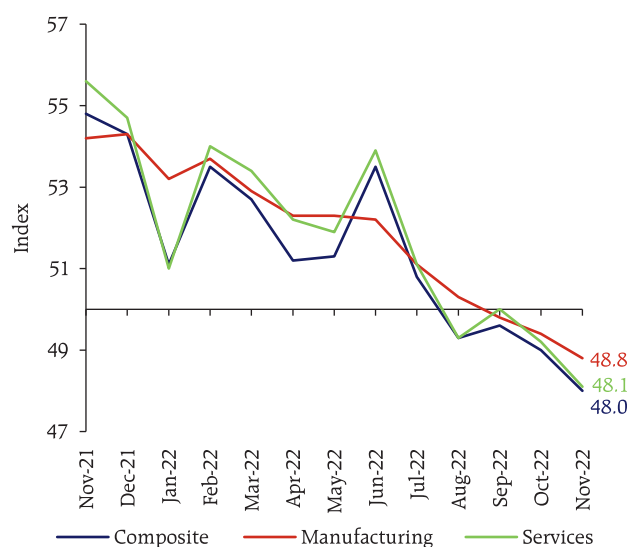
Sources: OECD; CEIC; and RBI staff estimates.

third successive month as the output of intermediate goods declined sharply (Chart 3).

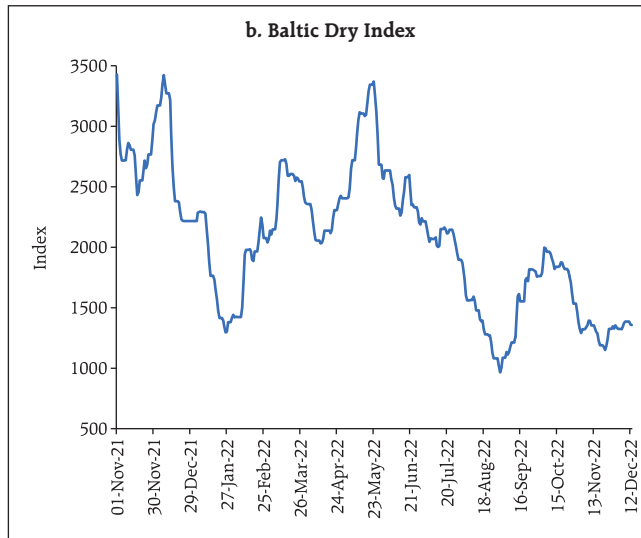
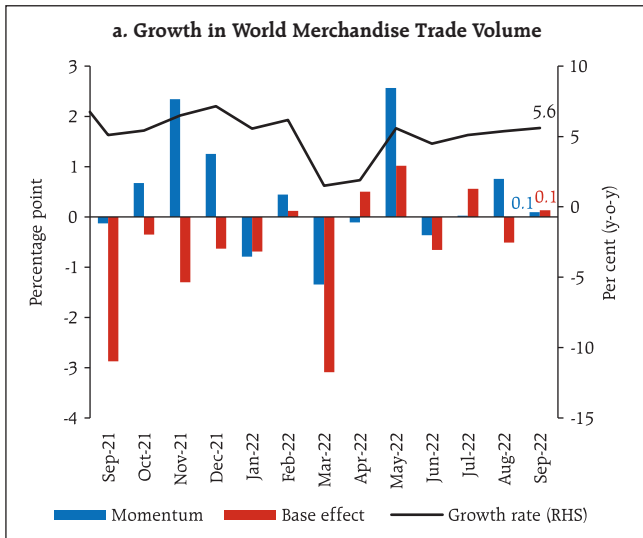
On a year-on-year (y-o-y) basis, world merchandise trade volume growth improved in September 2022 due to a favourable base effect (Chart 4a). Waning demand for vessels caused the Baltic Dry Index, a measure of

shipping charges for dry bulk commodities, to slide down for the second successive month in November, but an uptick has occurred in the last week of November through early December (Chart 4b). The World Trade Organisation (WTO)'s, goods trade barometer fell in spite of an acceleration of merchandise trade volume, signifying weaker export orders, air freight and electronic components. PMI subindices corroborate the contraction in new export orders for the ninth successive month.

Global commodity prices remained range-bound in November and early December (Chart 5a). Crude oil prices traded at an average of US\$ 91.1 per barrel in November and at around US\$ 80 in early December over demand concerns. Brent crude prices reversed a large part of the price gain during the initial months of Ukraine war, falling by 40 per cent till December 13, 2022 from the peak of USD 133.89 per barrel recorded on March 8, 2022 (Chart 5b). The implementation of the European Union (EU)'s ban on Russian sea-borne oil starting December 5, the application of a price cap on Russian oil and the OPEC+ decision not to cut

Chart 3: Global PMIs

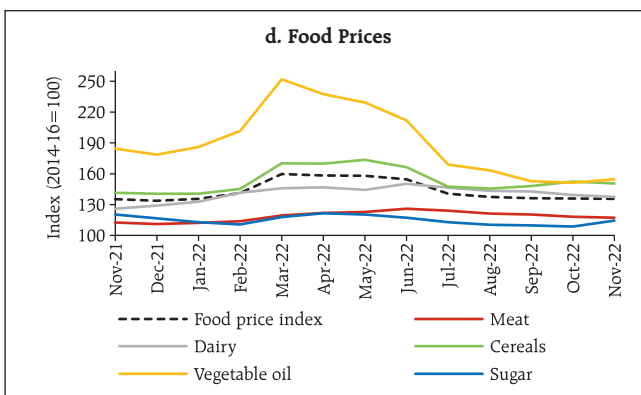
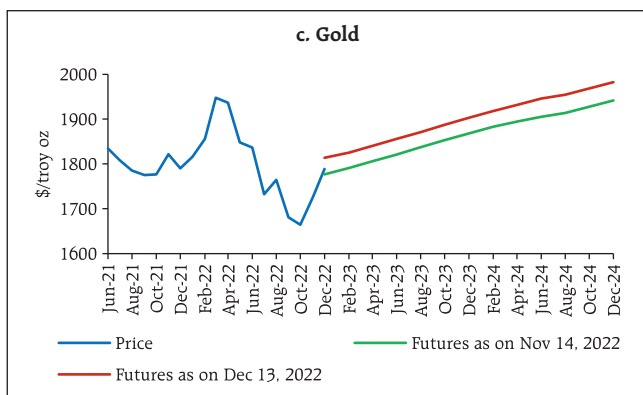
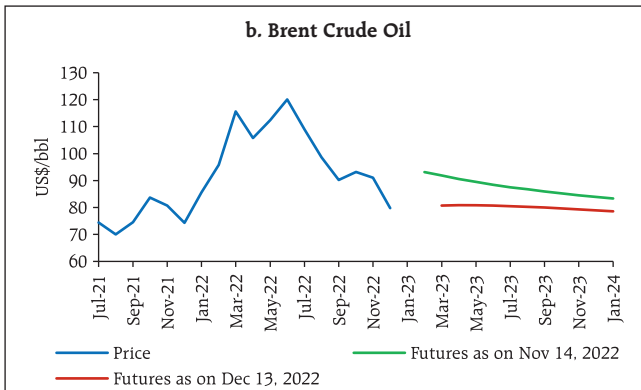
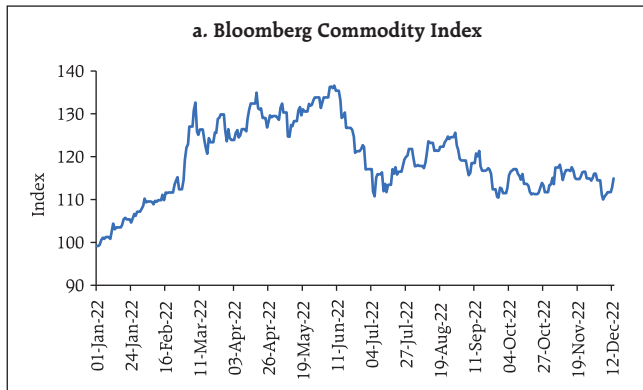
Source: IHS Markit.

Chart 4: World Trade and Shipping Costs

Sources: CPB Netherlands; and Bloomberg.

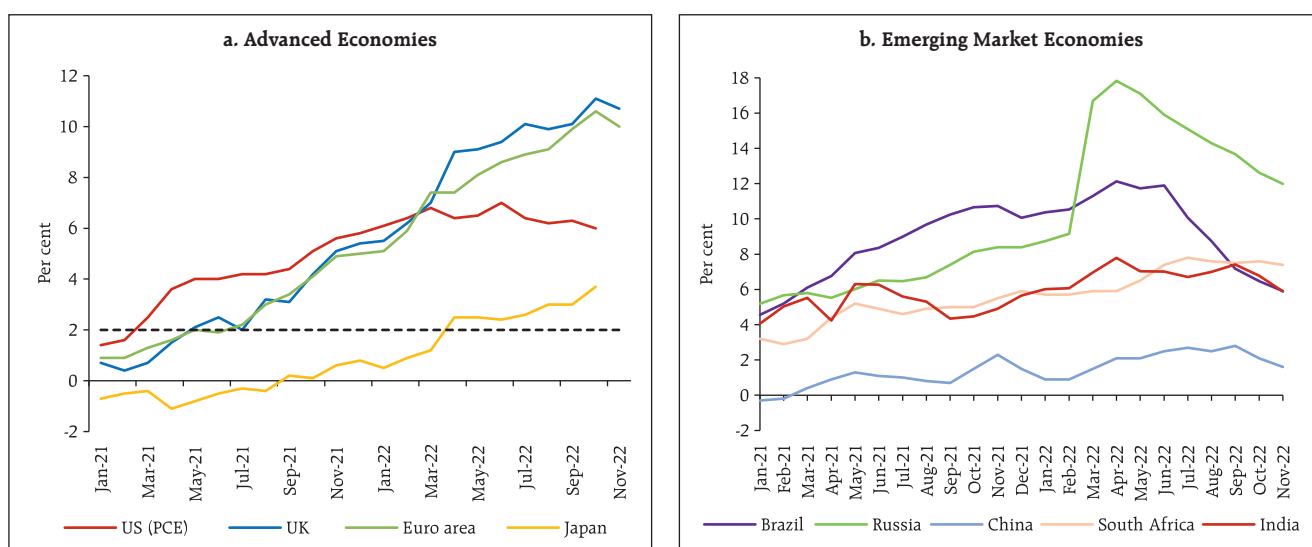
its oil production in the meeting held on December 4, 2022 has imparted uncertainty to the oil price

outlook. Gold prices inched up in November and early December, driven by investment demand (Chart 5c).

Chart 5: Commodity and Food Prices

Sources: Bloomberg; World Bank Pink Sheet; and FAO.

Chart 6: Inflation



Source: Bloomberg.

The Food and Agricultural Organisation (FAO) food price index⁴ registered its eighth consecutive monthly decline in November 2022 on account of a fall in prices of cereals, dairy and meat, offset by increase in prices of vegetable oils and sugar (Chart 5d).

There are signs of inflation easing, especially amongst emerging market economies (EMEs). The US CPI inflation eased markedly to 7.1 per cent in November 2022 from 7.7 per cent in October. Inflation based on the US personal consumption expenditure (PCE) index eased to 6.0 per cent (y-o-y) in October 2022 from 6.3 per cent in September (Chart 6a). In the Euro area, annual inflation slowed to 10.0 per cent in November 2022 from 10.6 per cent in October due to negative momentum in the cost of energy and services. In the UK, inflation edged down to 10.7 per cent in November 2022 from 11.1 per cent in October, led by transport subindex. Among the BRICS⁵ economies, inflation in Brazil eased to 5.9 per cent in November from 6.5 per cent in October. In Russia it eased to 12.0 per cent in November from 12.6 per cent in October. In China, inflation fell to 1.6

per cent in November *vis-à-vis* 2.1 per cent in October. In South Africa too inflation softened marginally to 7.4 per cent in November from 7.6 per cent in October (Chart 6b).

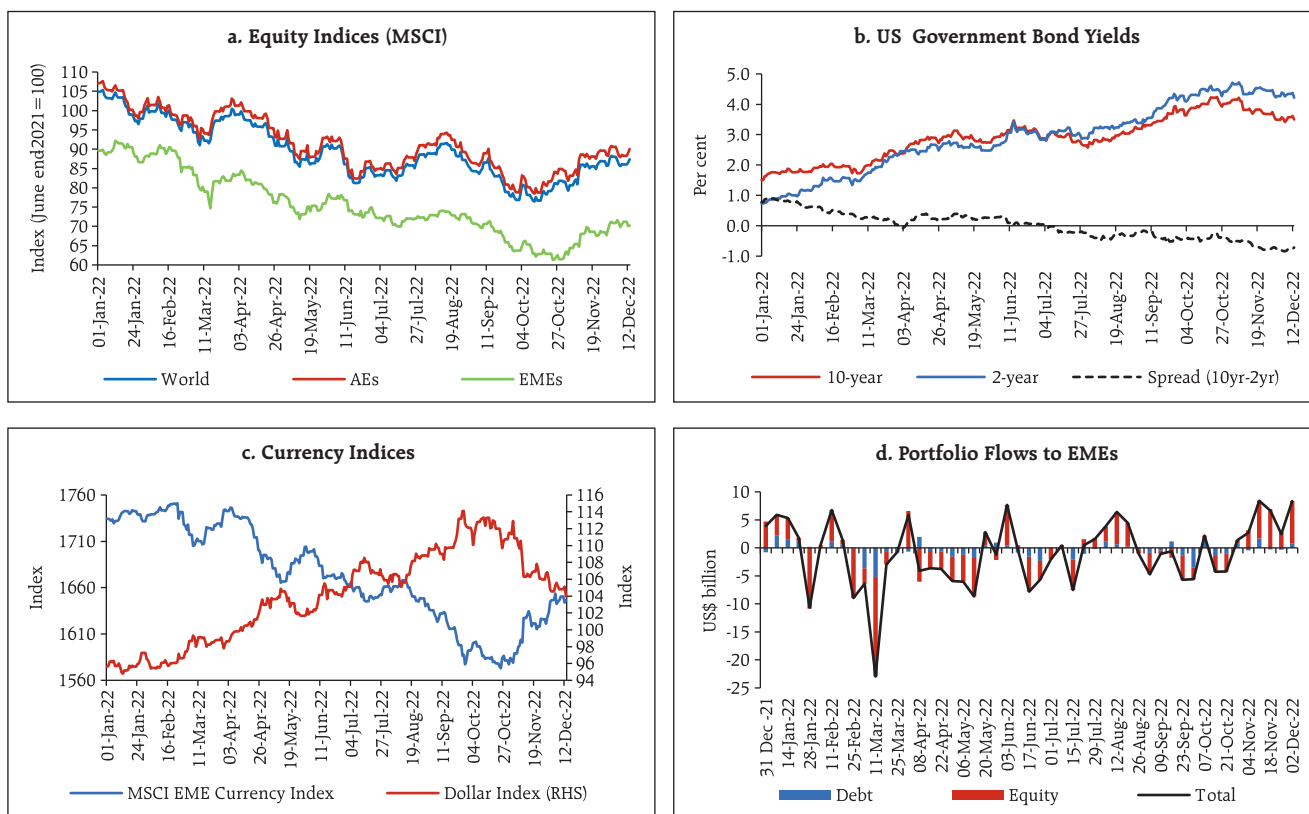
Global equity markets continued to rally in November on expectations of less aggressive rate actions by the US Fed. The rebound was driven by the EMEs sub-index, which grew by 14.6 per cent, while the AEs sub-index ended 6.8 per cent higher than their levels in October (Chart 7a). In the bond market, 10-year G-sec yields softened across major AEs on signs of easing inflationary pressures. The 10-year US treasury yield fell by 44 basis points in November while the 2-year G-sec yield eased by 17 bps, thus intensifying the magnitude of yield curve inversion and suggesting looming signs of recession (Chart 7b). The US dollar, which reversed its rally in October, continued to lose strength in November and early December. Concomitantly, the MSCI currency index for EMEs gained momentum in November, rising 3.6 per cent as capital inflows resumed (Chart 7c & 7d).

Central banks of most AEs and EMEs continued with monetary tightening, although the pace of

⁴ Sub-indices of this index include Cereal, Vegetable oil, Dairy, Meat and Sugar Price Indices.

⁵ BRICS stands for Brazil, Russia, India, China and South Africa.

Chart 7: Financial Markets

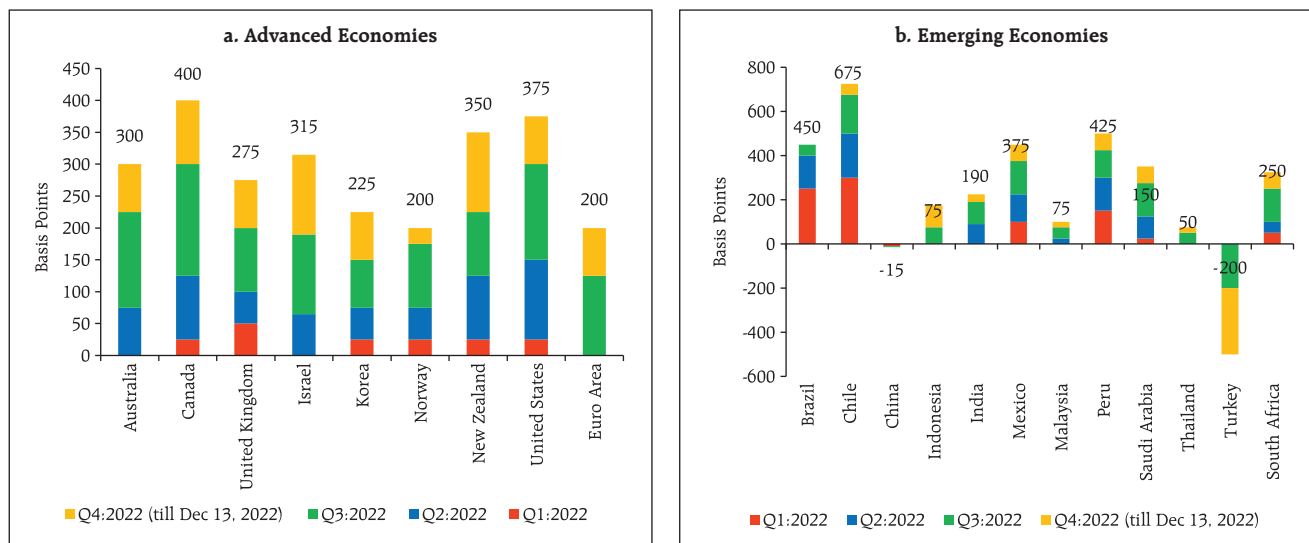


Sources: Bloomberg; and IIF.

tightening slowed. In December, the US Federal Open Markets Committee (FOMC) increased its target range

for the federal funds rate by 50 bps, with projections showing that the benchmark rate would peak at 5.1

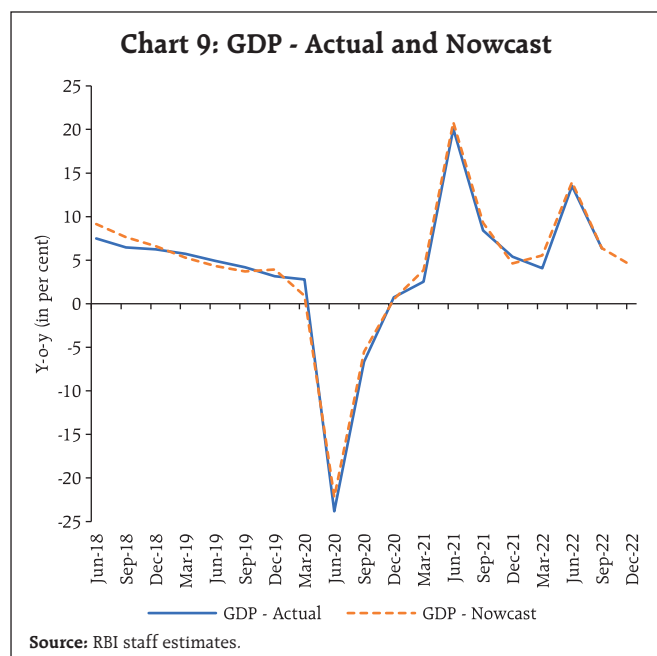
Chart 8: Synchronous Policy Hikes



Source: Bloomberg.

per cent in 2023 (Chart 8a). The Euro area and UK also raised their key rates in December by 50 bps each *vis-à-vis* 75 bps in their previous policies as central banks on both sides of the Atlantic saw the beginning of moderating inflation. Canada and Australia raised their policy rates by 50 bps and 25 bps, respectively, in December. New Zealand increased its policy rate by 75 bps in November. South Korea increased its policy rate by 50 bps in October, followed by a 25 bps hike in November. Israel went for 50 bps hike as compared with 75 bps hikes earlier. Japan has continued to diverge by maintaining an accommodative stance.

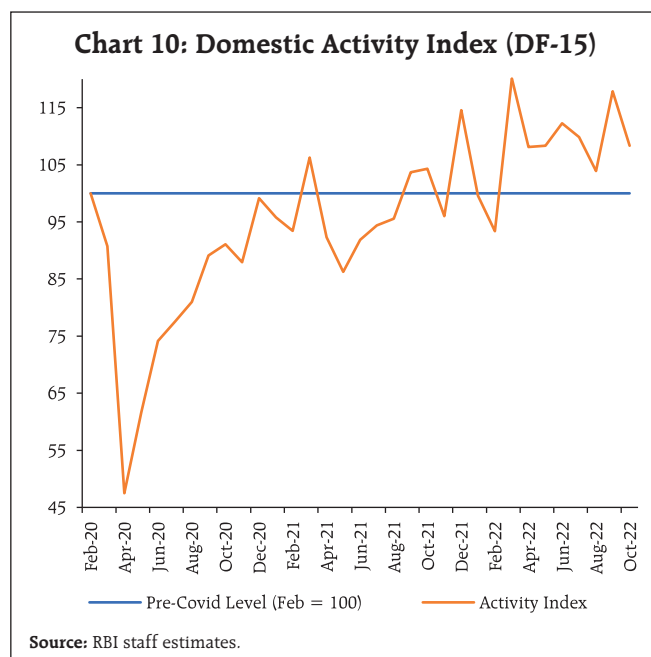
Most EME central banks have continued with policy tightening while a few others have paused (Chart 8b). South Africa, Philippines and Mexico announced rate hikes of 75 bps in their November meetings. Indonesia increased its policy rate by 50 bps in November. Peru and Thailand tightened by 25 bps in December and November, respectively. Chile held its rate unchanged for the first time in its December policy. Brazil and Russia in December and Hungary in November also kept their key rates unchanged. Turkey cut its rate by 150 bps in November while China continued with monetary accommodation.



III. Domestic Developments

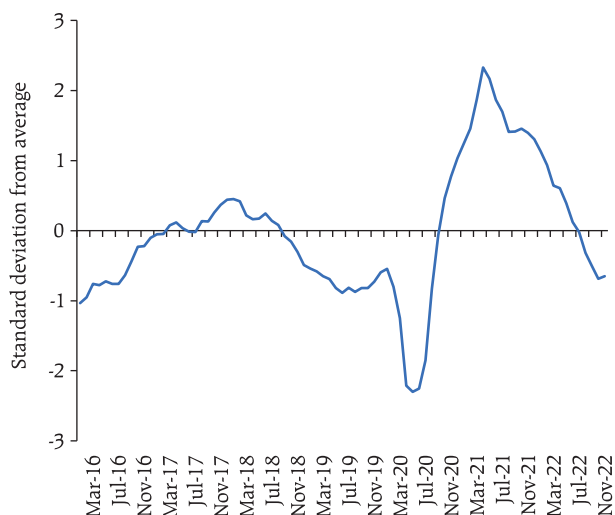
OECD's economic outlook released in November 2022 has noted that India is the only major economy that is likely to grow in excess of 5.5 per cent during 2023 and 2024.⁶ Our Activity Index, constructed by extracting the common trend underlying from a set of 15 high frequency indicators in a Dynamic Factor Model (DFM), remained above pre-pandemic levels despite some sequential moderation (Chart 9). Accordingly, our latest nowcast places real GDP growth at 4.3 per cent for Q3:2022-23 (Chart 10).

Despite a marginal dip in momentum, high frequency indicators suggest that underlying economic activity remains strong. PMI manufacturing and PMI services recorded strong expansion in November, aided by domestic demand and increase in new orders. Business expectations in both manufacturing and services sectors remained at record levels, boosted by favourable underlying demand, and softening inflation. Our index of supply chain pressures remained below its historical average (Chart 11).



⁶ <https://www.oecd.org/economic-outlook/november-2022#gdp>

Chart 11: Index of Supply Chain Pressures for India (ISPI)

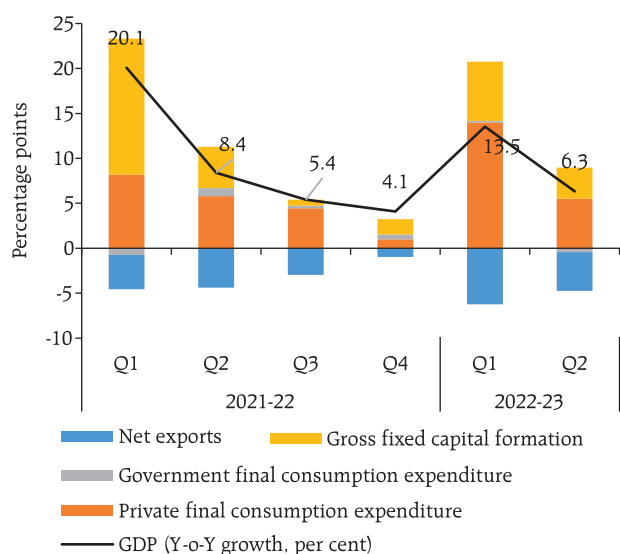


Source: RBI staff estimates.

Aggregate Demand

As per the quarterly estimates released by the National Statistical Office (NSO) on November 30, 2022 the Indian economy clocked a growth of 6.3 per cent in Q2:2022-23 in line with the Reserve Bank's projection in the September 2022 policy resolution (Chart 12). Consequently, GDP surpassed its pre-

Chart 12: Weighted Contribution to GDP Growth

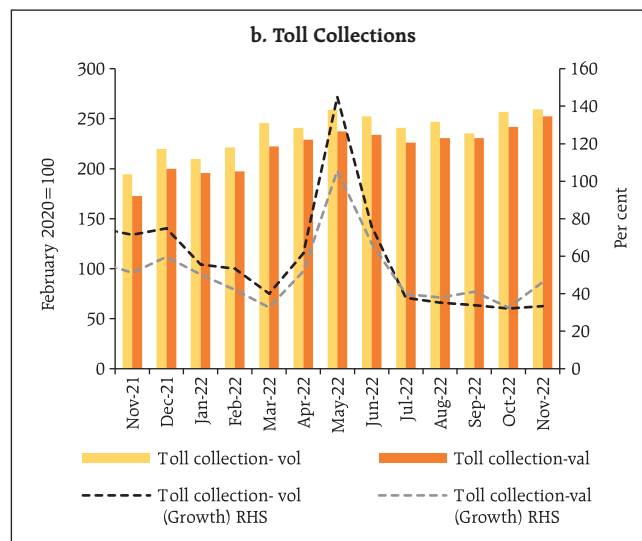
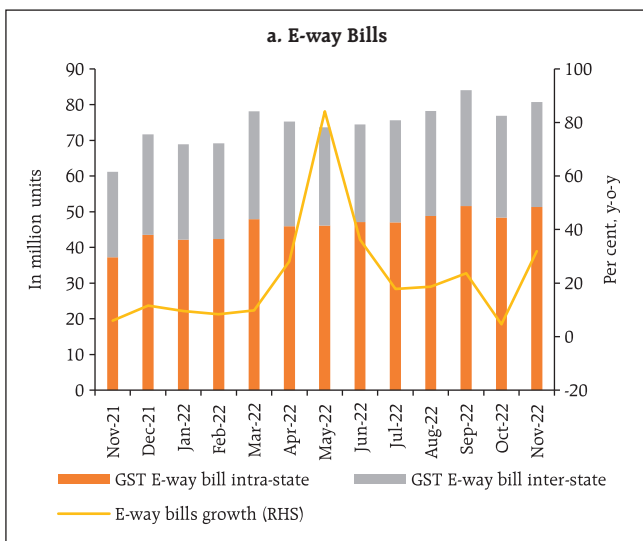


Source: NSO.

pandemic level by 7.6 per cent. Private consumption registered an impressive growth of 9.7 per cent in Q2:2022-23. This was due to faster resumption of contact-intensive services, restoration of consumer confidence and high festival season spending after two consecutive years of muted growth. Furthermore, double digit growth in wages and salaries of firms provided an upward thrust to urban consumption. Government final consumption expenditure (GFCE) recorded a contraction of 4.4 per cent in Q2:2022-23. Buoyed by the government's thrust on infrastructure, gross fixed capital formation (GFCF) registered a growth of 10.4 per cent in Q2:2022-23. This was also reflected in a sharp acceleration in proximate coincident indicators – steel consumption; and production and imports of capital goods. With the growth of imports outpacing that of exports, net exports contributed negatively to aggregate demand in Q2:2022-23 – the highest drag on aggregate demand from the external side since Q4:2012-13.

E-way bills generation breached the 80 million mark in November, led by an increase in movement of goods within states (Chart 13a). Toll collections strengthened both in volume and value terms, recording a series high of ₹4645.6 crore in November 2022 (Chart 13b).

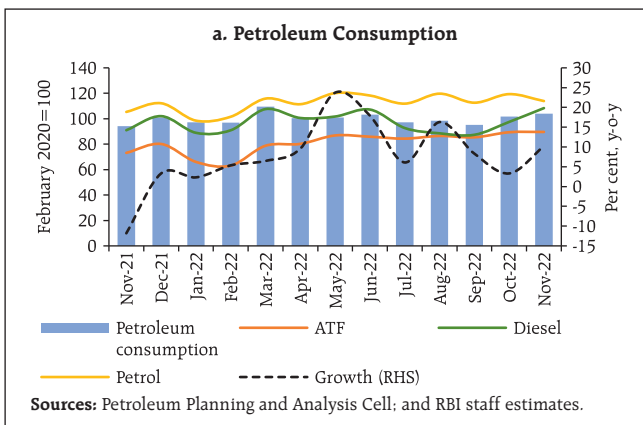
Fuel consumption accelerated in November on a low base of contraction a year ago. The eight-month peak in fuel consumption was led by increase in consumption of diesel as demand from the agriculture sector resumed post monsoon along with a pick-up in demand for transport (Chart 14a). Sales of automobiles registered growth in November on a low base of contraction a year ago. The momentum of sales eased, particularly for entry level segments, even as total sales volumes breached levels recorded in pre-pandemic February 2020 (Chart 14b). Retail sales of automobiles picked up further in November, rising above the 20 lakh

Chart 13: E-way Bills and Toll Collections

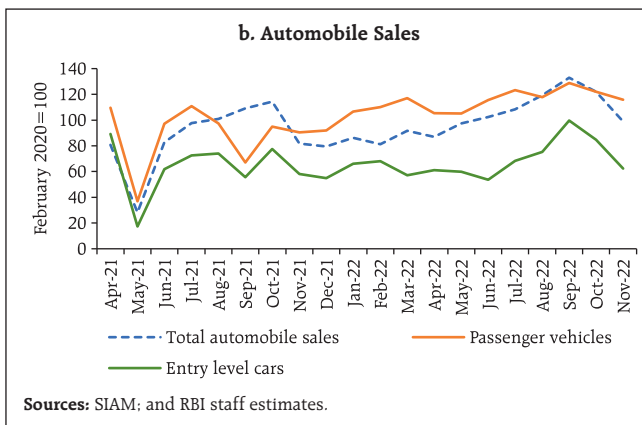
Sources: GSTN; RBI; and RBI staff estimates.

units mark. Registrations of non-transport vehicles remained above the pre-pandemic level, and for

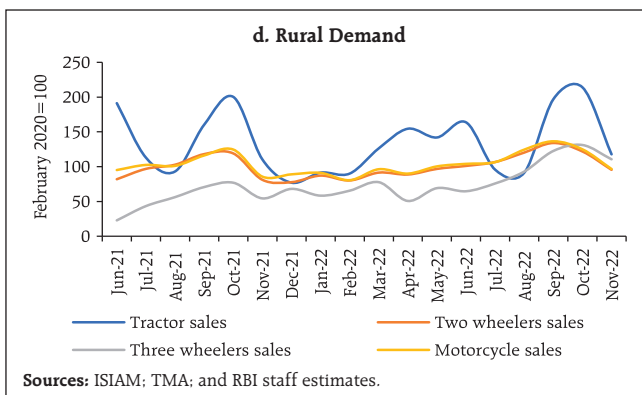
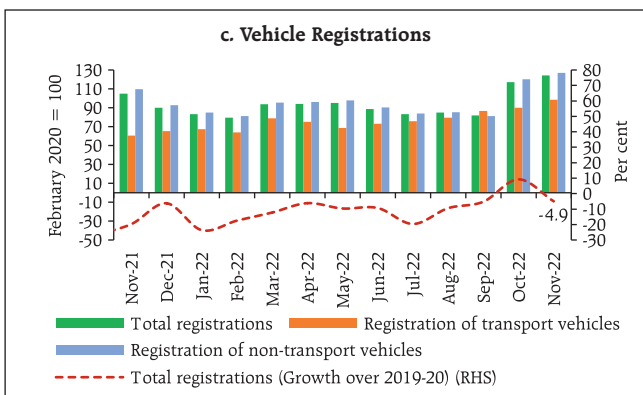
transport vehicles it inched nearer to normalisation (Chart 14c).

Chart 14: Automobile Sector Indicators

Sources: Petroleum Planning and Analysis Cell; and RBI staff estimates.



Sources: SIAM; and RBI staff estimates.



Sources: ISIAM; TMA; and RBI staff estimates.

Rural demand reflected festive fatigue, with sales of tractors, two wheelers, motor cycles and three wheelers moderating from the previous month. The farm sector however, remained expansionary, with domestic sales of tractors recording growth, even as units sold slipped to a three-month low in November. Sales of two wheelers and motorcycles dipped below pre-pandemic levels, while three wheeler sales remained above the benchmark (Chart 14d).

In the trade, hotels and transport sector, hotel occupancy rates declined to an eight month low of 57.2 per cent in October as the end of the festival season reduced corporate demand even as the revenue per available room and average room rates remained above 2019 levels for the seventh straight month (Chart 15).

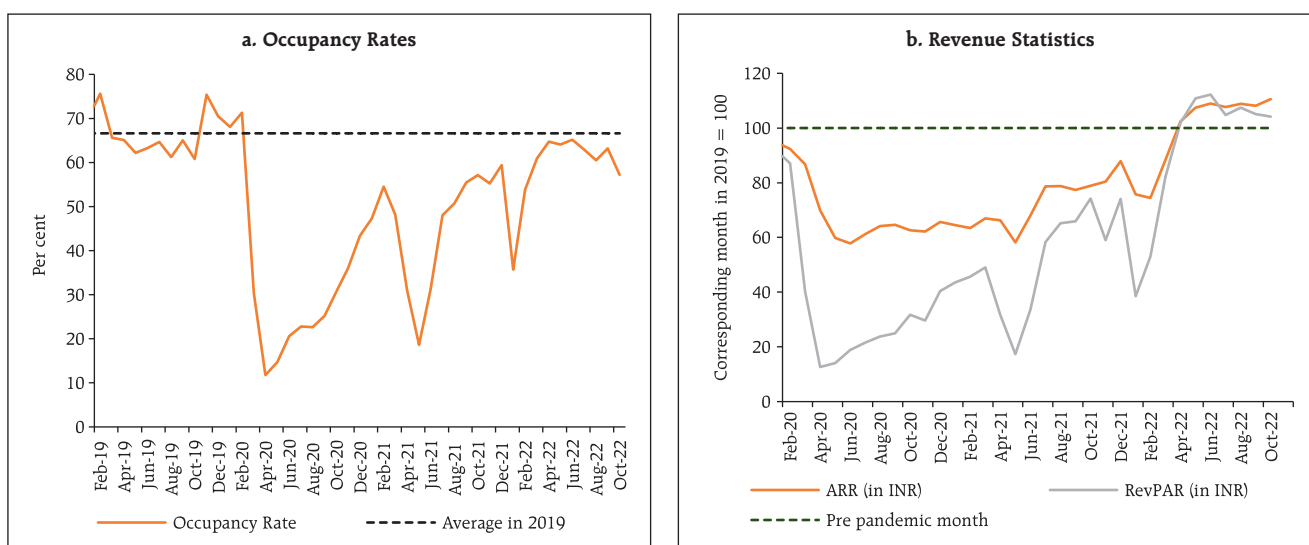
Sales of fast-moving consumer goods (FMCG) products declined in November over the previous

month by 16.3 per cent as festival fatigue reduced demand. On a y-o-y basis too, demand contracted by 2.7 per cent.⁷ The decline in rural sales was steeper at (-) 17 per cent, while urban sales contracted by (-) 10.1 per cent over October 2022.

As per the household survey of the Centre for Monitoring Indian Economy (CMIE), the all-India unemployment rate increased marginally to 8.0 per cent in November from 7.8 per cent in October 2022, led by an increase in urban areas (Chart 16). The rise in the unemployment rate was driven by an increase in the labour force participation rate (LFPR) to 39.6 per cent in November from 39.0 per cent in the previous month as the absolute number of employed workers was higher in both rural and urban areas.

In terms of the organised sector employment outlook, the purchasing managers' index (PMI)

Chart 15: Hotel Sector Indicators



Sources: HVS Anarock; and RBI staff estimates.

⁷ As per Bizom - a retail intelligence platform that collates FMCG data at the store level take-off.

Chart 16: Employment, Unemployment and Labour Force Participation Rates

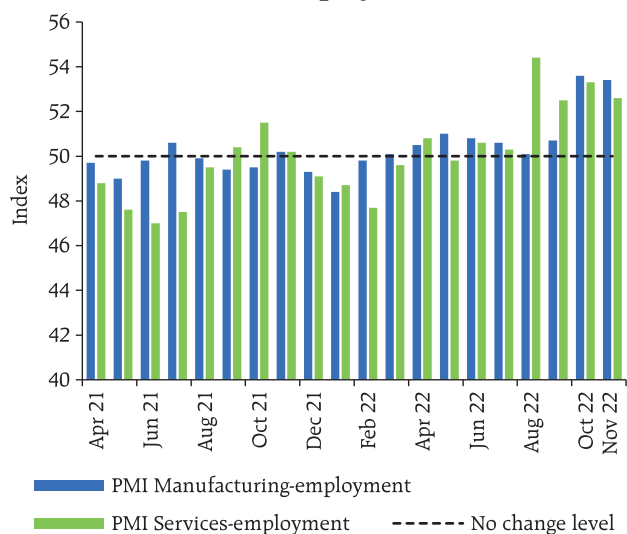
Source: CMIE.

employment sub-index for both manufacturing and services remained in the expansion zone in November 2022, *albeit* with a sequential moderation (Chart 17).

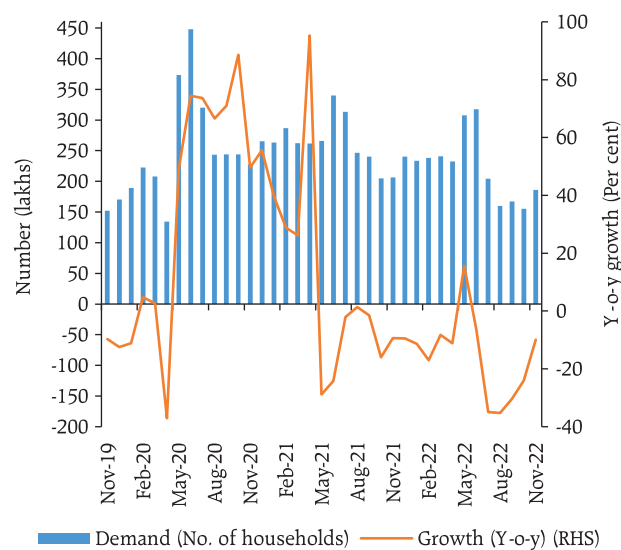
Demand for Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) work in the rural sector increased sequentially, reflecting seasonal factors (Chart 18). However, on a y-o-y basis,

it remained in contraction, indicating better job opportunities elsewhere as compared to a year ago.

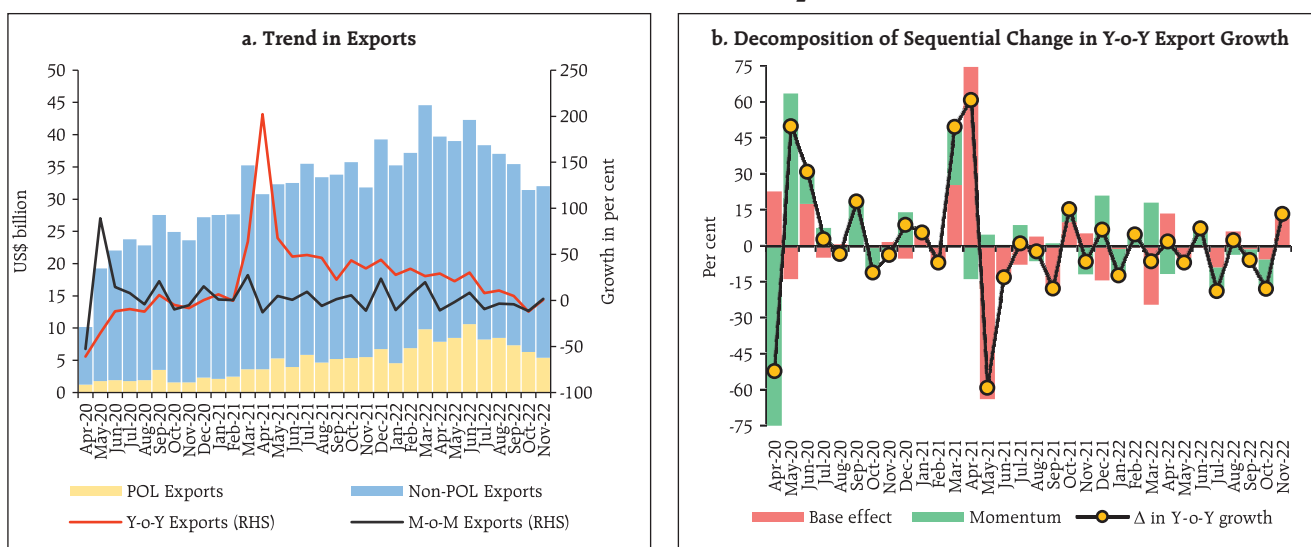
India's merchandise exports at US\$ 32.0 billion, registered growth of 0.6 per cent (y-o-y) in November 2022, following a contraction of 12.1 per cent in October 2022. On a m-o-m basis, growth occurred in November 2022 after four successive months of

Chart 17: PMI Employment Indices

Note: PMI value of above 50 indicates expansion.
Source: S&P Global.

Chart 18: Demand for Work under MGNREGA

Source: MGNREGA website.

Chart 19: Trend in Merchandise Exports of India

Source: DGCI&S.

contraction (Chart 19).

Among the 30 major principal export items, 15 items accounting for 33.1 per cent of total exports registered growth (y-o-y) in November 2022. Electronics and drugs and pharmaceuticals supported growth in November 2022 while cotton yarn fabrics, petroleum products, and man-made yarn pulled exports down (Chart 20). Non-oil exports at US\$ 26.6 billion grew by 1.1 per cent (y-o-y) in November 2022 after three consecutive months of contraction.

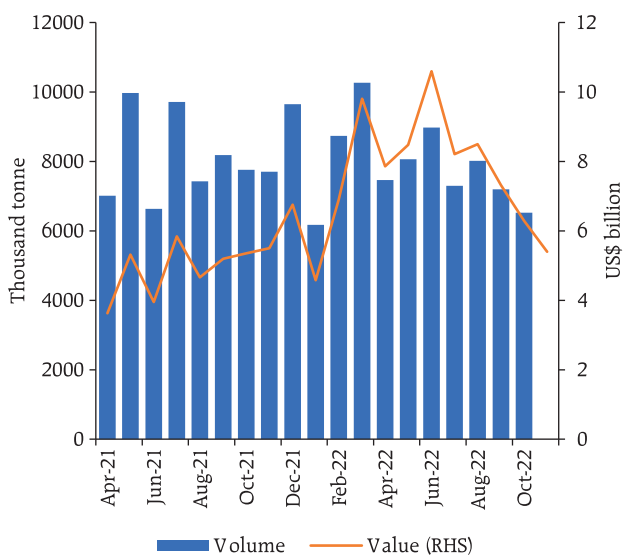
After twenty successive months of growth, exports of petroleum and its products at US\$ 5.4 billion contracted by 1.8 per cent (y-o-y) in November 2022 (Chart 21). Among other factors, maintenance shutdown in some export-oriented refineries may have limited the petroleum exports. Engineering exports at US\$ 8.1 billion declined for the fifth consecutive month in November 2022 (-0.3 per cent y-o-y), however, the pace of decline has slowed down significantly.

As per component-wise details for which data is available up to October 2022, iron and steel exports

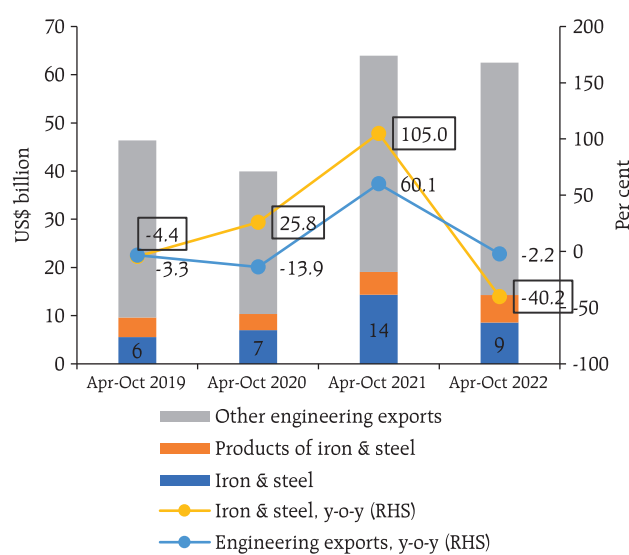
fell by 40.2 per cent y-o-y in April-October 2022. On the other hand, overall engineering exports registered a contraction of 2.2 per cent during the same period, partially reflecting the impact of export duty levied on certain items of iron and steel in May 2022 (Chart 22). The withdrawal of export duties in November 2022 is expected to improve

Chart 20: Relative Contribution to Export Growth

Source: DGCI&S.

Chart 21: Petroleum and its Products Exports

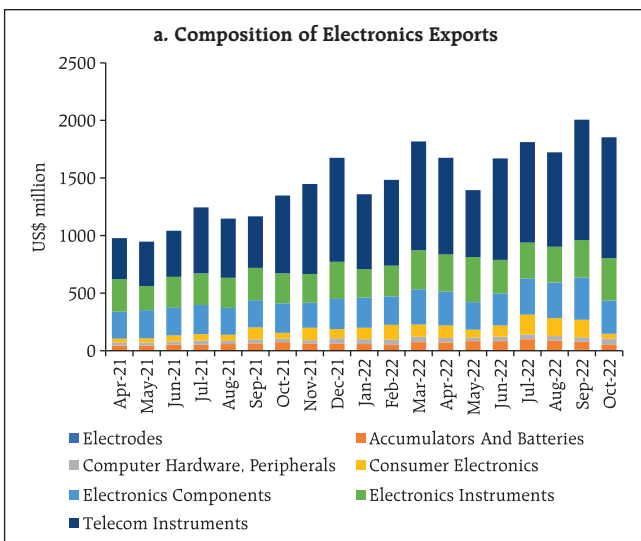
Source: DGCI&S.

Chart 22: Engineering Exports

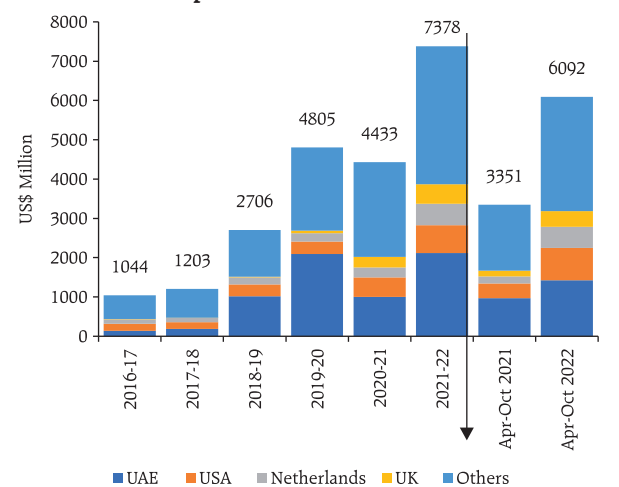
Source: DGCI&S.

competitiveness in this category and provide a fillip to exports⁸, although global demand conditions have weakened. Global steel demand is expected to fall by 2.3 per cent in 2022 and grow at a moderate rate of 1.0 per cent in 2023, as per the World Steel Association.⁹

Electronics goods exports at US\$ 1.9 billion grew for the twentieth successive month in October 2022, driven primarily by telecom instruments (Chart 23a). Exports to major destinations such as the UAE, US, Netherlands and UK have been rising over the years

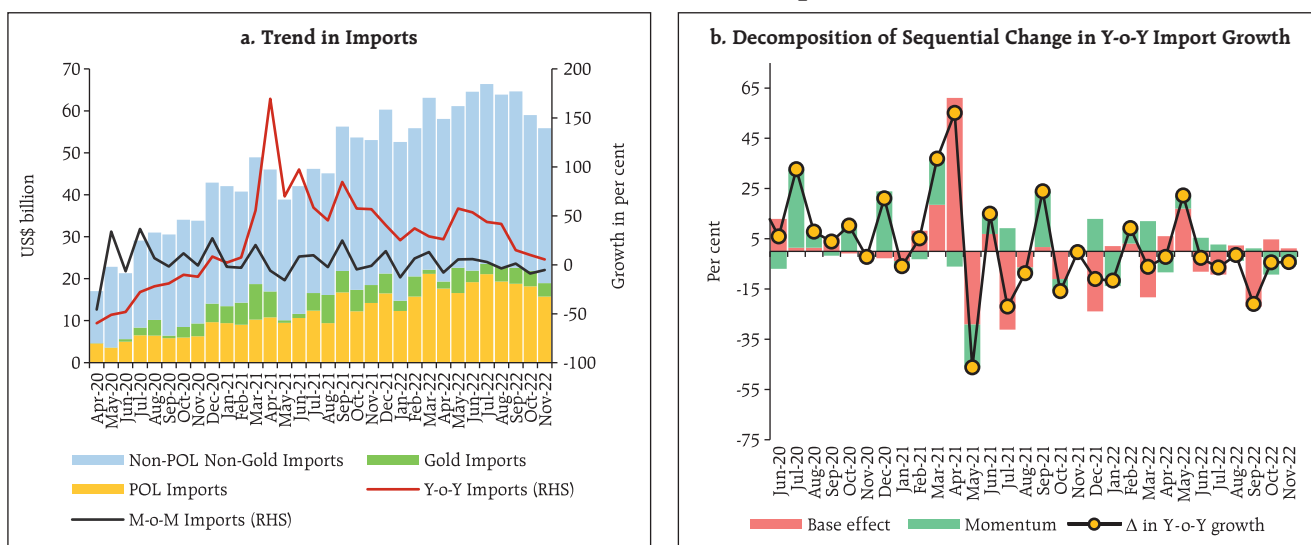
Chart 23: Electronic Goods Exports of India

Source: DGCI&S.

b. Exports of Telecom Instruments

⁸ <https://pib.gov.in/PressReleasePage.aspx?PRID=1877232#:~:text=The%20Central%20Government%20has%20restored,steel%20products%20including%20pig%20iron.>

⁹ <https://worldsteel.org/steel-topics/statistics/short-range-outlook/>

Chart 24: Trend in Merchandise Imports of India

Sources: DGCI&S.

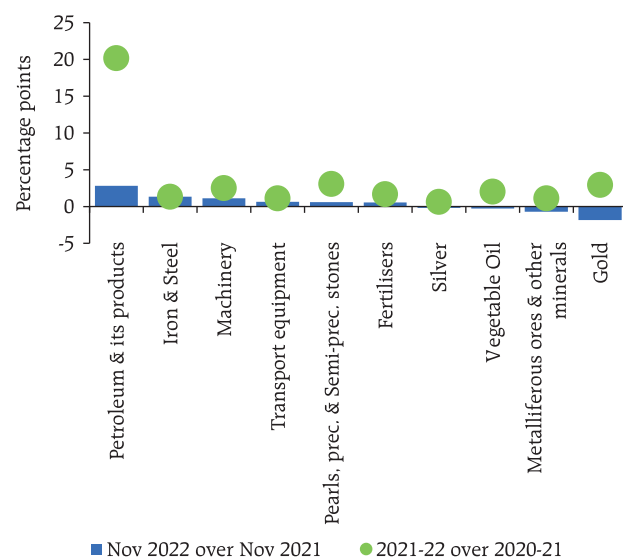
(Chart 23b). The UAE accounts for more than one-fourth of India's telecom instruments exports. The National Policy on Electronics, 2019 and the Production Linked Incentive (PLI) scheme for electronics and IT hardware have given a boost to India's electronics exports.

India's imports at US\$ 55.9 billion, at a ten-month low level, continued to decelerate and registered a growth of 5.4 per cent in November 2022 (Chart 24). Commodity-wise, items accounting for 84.0 per cent of total imports recorded y-o-y growth in November.

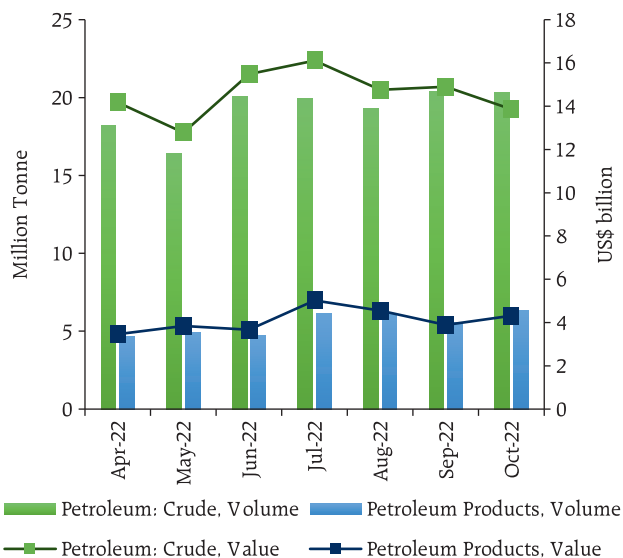
Petroleum products, iron and steel and machinery contributed the most to import growth whereas gold, metalliferous ores and other minerals and vegetable oil pulled imports down (Chart 25). Petroleum imports, however, declined on a sequential basis for the fourth successive month to US\$ 15.7 billion in November 2022 from US\$ 21.1 billion in July.

As per disaggregated data which is available up to October 2022, imports of select petroleum products (primarily motor spirit and naptha) increased by 14.6 per cent in October 2022 in volume

terms due to domestic shortfall of refined petroleum products caused by refinery turnarounds (Chart 26). On a sequential basis, Russia's share in India's crude imports in volume terms remained at around 25 per cent while in value terms, it increased from 22.6 per cent in September to 23.1 per cent in October 2022.

Chart 25: Relative Contribution to Import Growth

Source: DGCI&S.

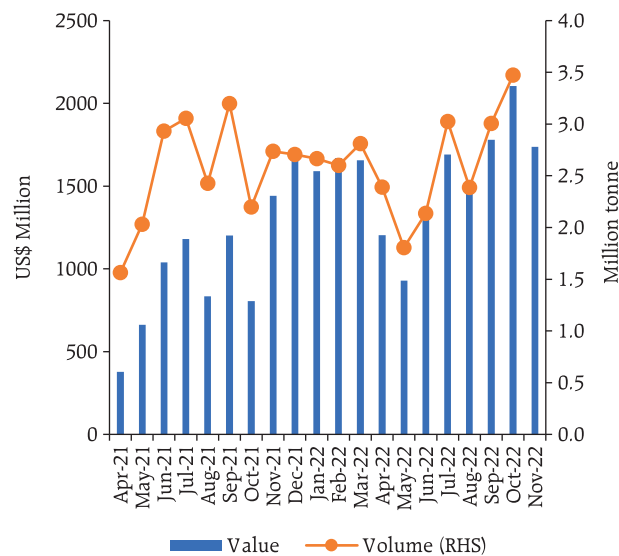
Chart 26: Petroleum Products Imports of India

Source: DGCI&S.

Gold imports at US\$ 3.2 billion continued to decline for the fifth successive month in November 2022. As per the World Gold Council, higher inflation in rural India is expected to have dampened gold demand in Q3:2022-23 compared with a year ago.

India's fertiliser imports at US\$ 1.7 billion grew in value terms for the thirteenth successive month in November 2022. As per disaggregated data, an increase in volume terms was registered after five months of contraction, driven by manufactured fertilisers, primarily driven by imports from Morocco and Russia (Chart 27).

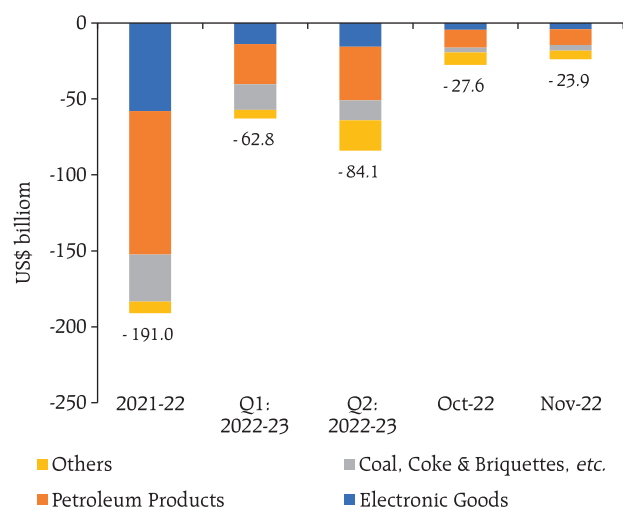
The merchandise trade deficit moderated to US\$ 23.9 billion in November, a five-month low. Commodity-wise, petroleum products continued to drive the trade deficit (Chart 28). Apart from crude oil, rising prices of vegetable oil, coal and fertilisers contributed to ballooning of the trade deficit. The latest 'below trend' reading on the Goods Trade Barometer of the World Trade Organisation (WTO) for September 2022 projects a worsening of the global trade outlook. A silver lining is the India-Australia Economic Cooperation and

Chart 27: India's Fertiliser Imports

Source: DGCI&S.

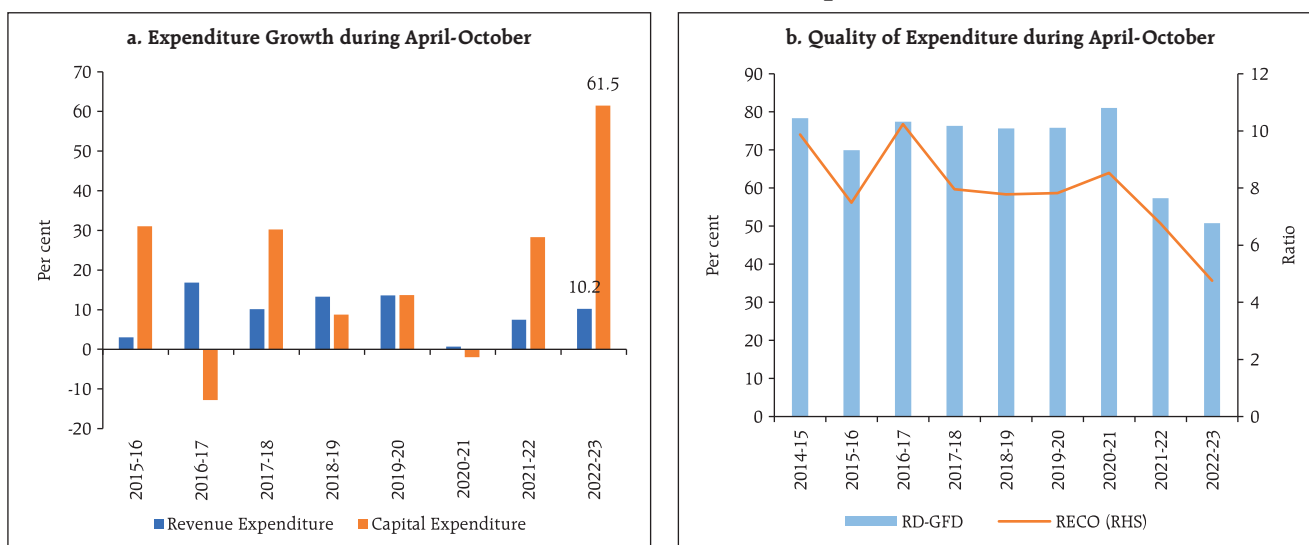
Trade Agreement which will come into effect from end-December 2022.

During April–October 2022, the gross fiscal deficit of the central government stood at 45.6 per cent of budget estimates (BE), higher than in the corresponding period of the previous year. The thrust on capital spending continued with a year-on-

Chart 28: Composition of Trade Deficit of India

Note: Coal exports in November 2022 are assumed to be of same magnitude as in October 2022.

Source: DGCI&S.

Chart 29: Trends in Government Expenditure

Sources: Controller General of Accounts (CGA); and Union Budget Documents.

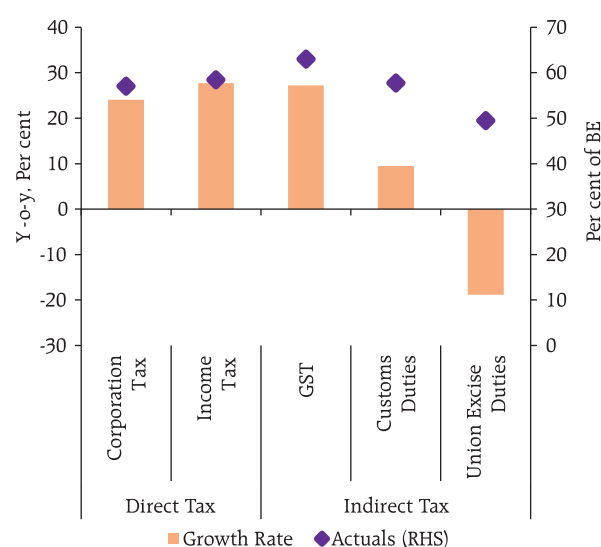
year (y-o-y) growth in capital outlay of 56.7 per cent, Revenue expenditure recorded muted growth of 10.2 per cent, leading to a marked improvement in the quality of spending during the period (Chart 29).

On the receipts side, gross tax revenue recorded a growth of 18.0 per cent, driven by an increase in collections under all major tax heads except excise duty. This is attributable to the cut in excise duty on petrol and diesel in May 2022. Direct and indirect taxes registered a y-o-y growth of 25.5 per cent and 11.1 per cent, respectively (Chart 30). On the other hand, non-tax revenues contracted by 13.6 per cent during April-October. Non-debt capital receipts recorded an increase of 81.0 per cent, led by the successful initial public offer (IPO) of the Life Insurance Corporation (LIC).

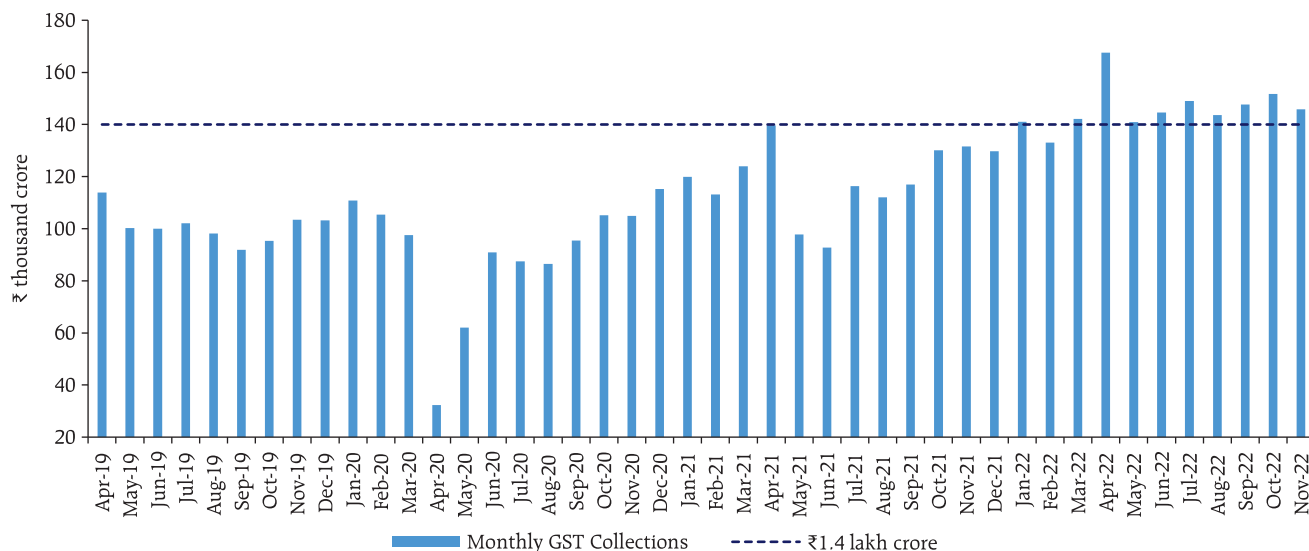
GST collections (Centre plus states) in November 2022 stood at ₹1.46 lakh crore, recording a growth rate of 11 per cent over the corresponding month of the previous year. Thus, GST revenues have surpassed ₹1.4 lakh crore for the ninth consecutive month (Chart 31).

Aggregate Supply

Aggregate supply, as measured by the gross value added (GVA) at basic prices, expanded by 5.6 per cent in Q2:2022-23 (Chart 32). While agriculture and services sectors exhibited robust growth, the industrial sector recorded a sharp contraction owing to intensification of input cost pressures.

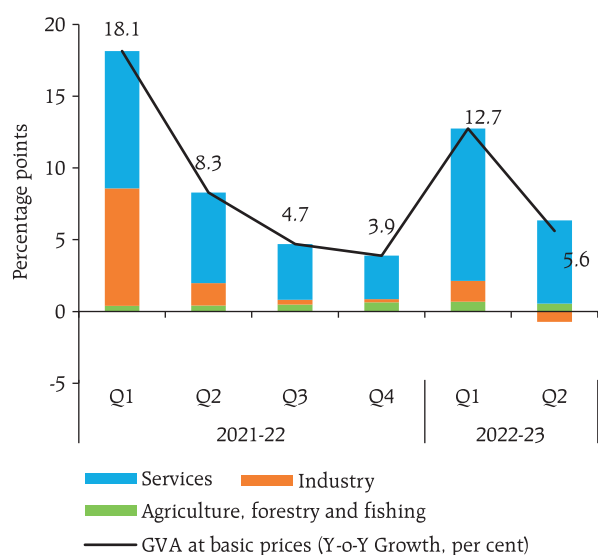
Chart 30: Tax Revenue during April-October

Sources: CGA; and Union Budget Documents.

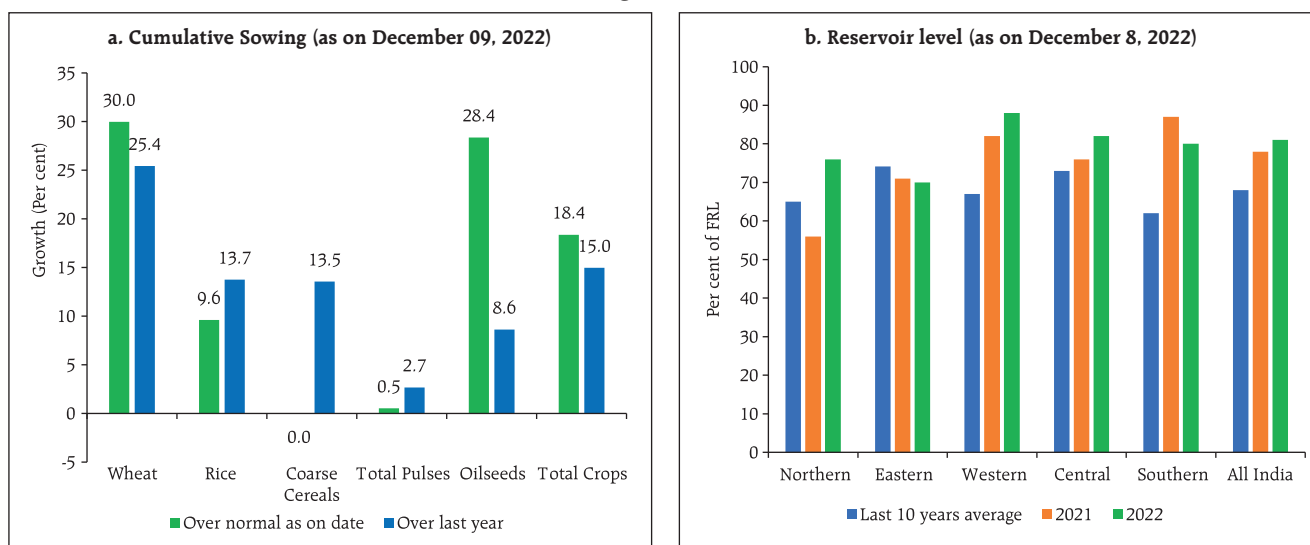
Chart 31: Monthly GST Revenue

Within industry, manufacturing registered a contraction of 4.3 per cent in Q2:2022-23. Higher expenditure outpaced sales growth, thereby exerting pressure on operating profit margins. The services sector, the mainstay of overall GVA growth,

registered a broad-based growth of 9.0 per cent during Q2:2022-23. An uptick was recorded in activity in trade, hotels, transport, communication and services related to broadcasting; and financial, real estate and professional services.

Chart 32: Weighted Contribution to GVA Growth

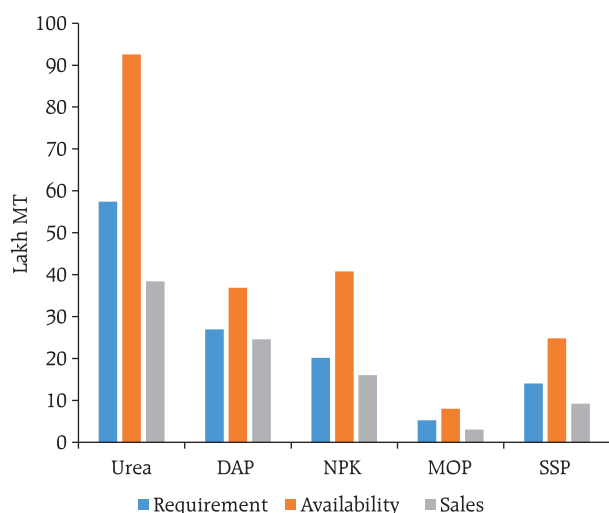
The agriculture and allied sector is poised to perform well in the ensuing *Rabi* season. Despite a slow start, *Rabi* sowing has picked up pace, supported by congenial soil moisture, sufficient fertiliser availability and elevated open market prices. *Rabi* acreage, at 526.27 lakh hectares as on December 9, 2022 was 15.0 per cent higher than a year ago, driven by higher acreage under wheat (25.4 per cent) and oilseeds (8.6 per cent) (Chart 33a), and supported by a hike in minimum support prices (MSPs) for these crops in the range of 5.5 to 7.9 per cent. Furthermore, as on December 8, 2022 the total live storage in 143 major reservoirs was higher at 81 per cent of the full reservoir level (FRL) as compared to that of last year (78 per cent of FRL) and the 10-year average (68 per cent of FRL) (Chart 33b).

Chart 33: Progress of Rabi Season

Sources: MoA&FW; and Central Water Commission (CWC).

Robust *Rabi* sowing was supported by easy availability of fertilisers compared to the requirement up to November 16, 2022 (Chart 34).¹¹ The supply of fertilisers at affordable prices to farmers was ensured through higher fertiliser subsidies, notwithstanding

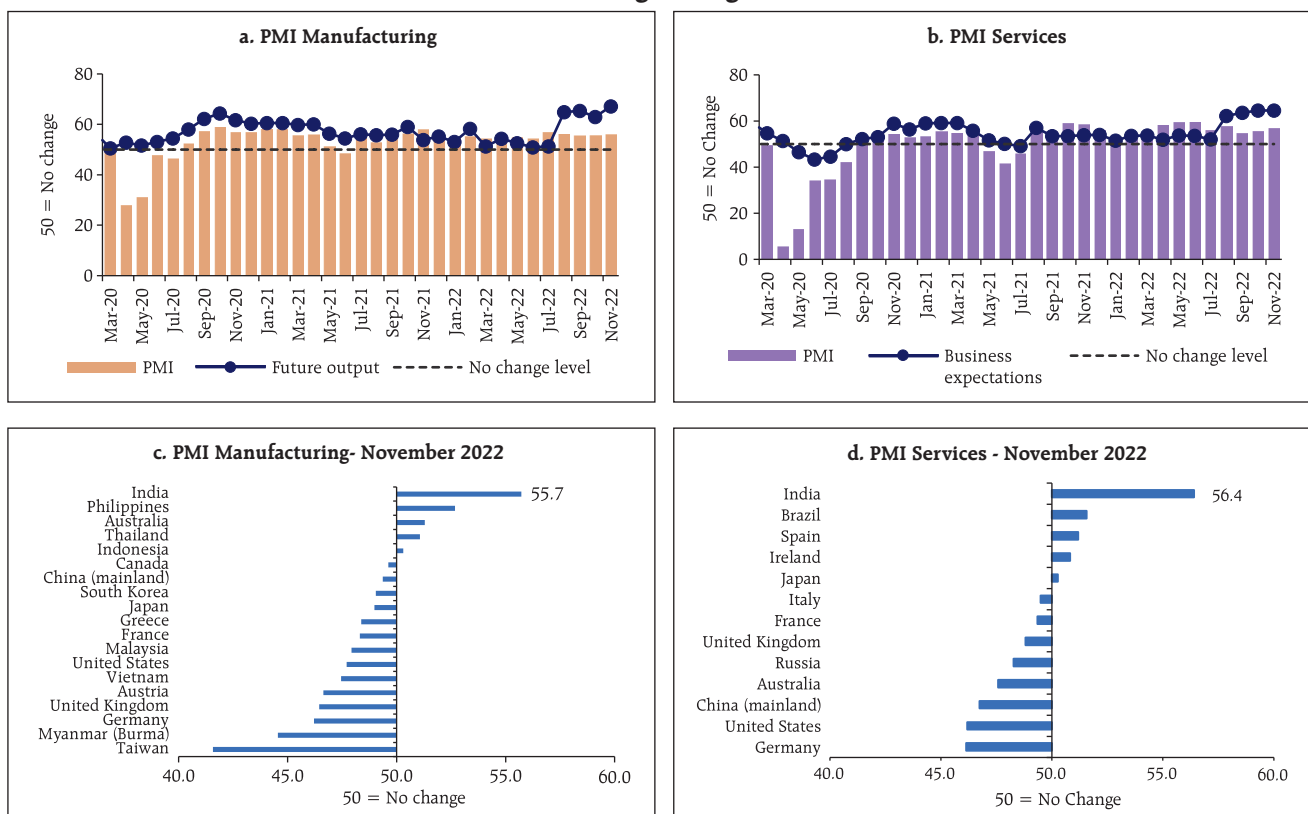
the rise in international prices. Moreover, open market prices of major *Rabi* crops like wheat, *masur*, rapeseed and mustard ruling above the announced MSPs helped in increased acreage response from farmers.

Chart 34: Fertiliser Supply during Rabi 2022-23 (up to 16.11.2022)

Source: Department of Fertilisers.

The manufacturing purchasing managers' index (PMI) accelerated to 55.7 in November from 55.3 a month ago, supported by a strong increase in production and new orders. This was accompanied by an increase in hiring and upbeat future sentiments. Business confidence in terms of expectations of future output touched an eight-year high at 67.2 in November (Chart 35a). The services PMI recorded further expansion, with the business expectations index surpassing its long run average and increasing to its highest mark since January 2015. This upturn reflected domestic demand and sustained increase in new business output (Chart 35b). A cross-country comparison shows India had the highest PMI readings among major economies in November (Chart 35c & d).

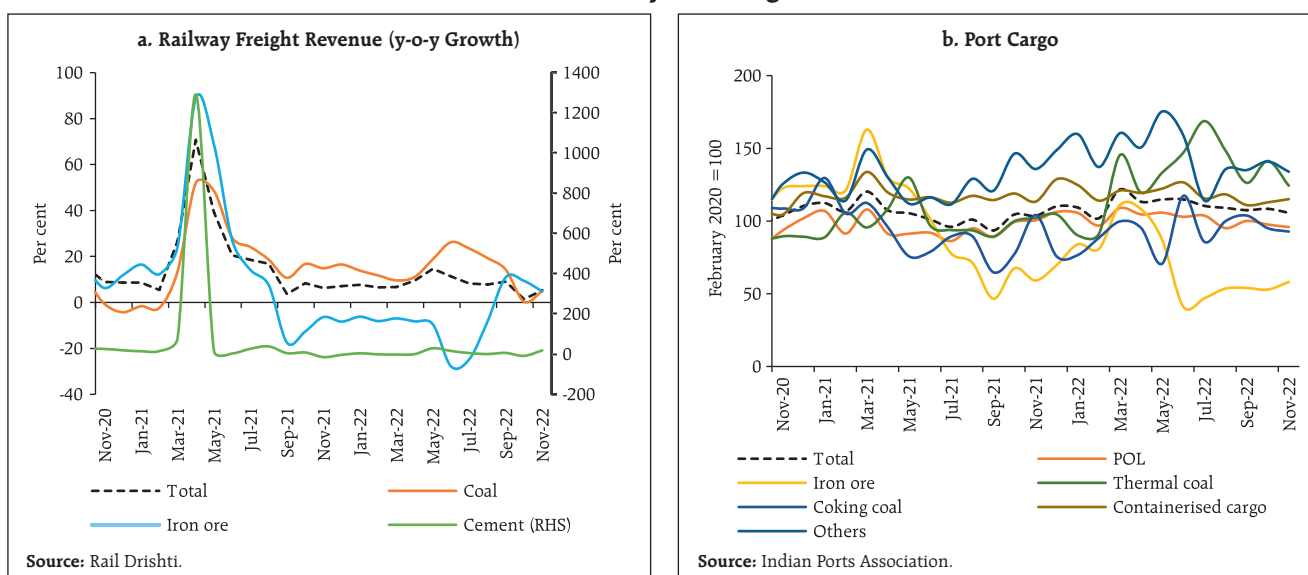
¹⁰ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1876929>

Chart 35: Purchasing Managers' Index (PMI)

Source: S&P Global.

In the services sector, transport indicators recorded moderation with railway freight traffic

earnings registered expansion at 5.2 per cent in November as compared to 6.2 per cent a year ago

Chart 36: Railway and Cargo Traffic

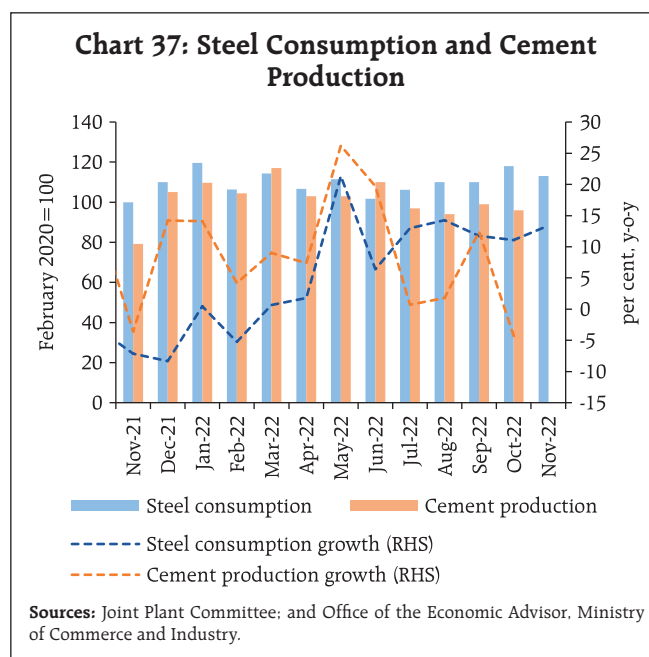
Source: Rail Drishti.

Source: Indian Ports Association.

(Chart 36a). Cargo traffic at major ports remained subdued in November due to high freight cost and volatility in international trade (Chart 36b).

In the construction sector, cement production and steel consumption reflected a mixed picture, as steel consumption showed double digit y-o-y growth for the fifth consecutive month in November 2022 (Chart 37). Cement production declined y-o-y over a high base in October 2022 owing to the festivals and prolongation of monsoon season.

Passenger footfalls picked up in November over the previous month for both domestic and international passengers. Air cargo continued to record a m-o-m contraction, both domestic and international (Table 2). In December (up to December 11, 2022), activity in both passenger and cargo segments increased on a m-o-m basis.



A number of key initiatives and developments at the regional level which contribute to building up the

Table 2: High Frequency Indicators- Services

Sector	Indicator	High Frequency Indicators- Services Growth (y-o-y, per cent)				Growth over 2019			
		Aug-22	Sep-22	Oct-22	Nov-22	Aug-22/ Aug-19	Sep-22/ Sep-19	Oct-22/ Oct-19	Nov-22/ Nov-19
Urban Demand	Passenger Vehicles Sales	21.1	91.9	28.6	28.1	48.7	42.9	7.1	9.1
Rural Demand	Two Wheeler Sales	17.0	12.9	2.3	16.5	2.9	4.7	-10.2	-12.4
	Three Wheeler Sales	65.3	73.4	70.4	102.5	-34.8	-23.7	-19.2	-18.1
	Tractor Sales	-1.9	23.0	6.8	6.5	42.2	34.3	15.6	24.8
Trade, hotels, transport, communication	Commercial Vehicles Sales	39.4				38.6			
	Railway Freight Traffic	7.9	9.1	1.4	5.2	31	30.6	26.8	21.8
	Port Cargo Traffic	8.6	14.9	3.1	2.0	8.6	13	8.5	6
	Domestic Air Cargo Traffic	4.8	6.8	-8.3		-9	-5.9	-17.5	
	International Air Cargo Traffic	-5.0	-4.9	-19.4		-10.2	-3	-12.6	
	Domestic Air Passenger Traffic	54.9	49.0	30.4		-12.9	-8.2	-5	
	International Air Passenger Traffic	256.9	164.0	115.0		-19.8	-17.8	-16.2	
	GST E-way Bills (Total)	18.7	23.7	4.6	32.0	52.7	60.3	45.4	51.1
	GST E-way Bills (Intra State)	22.5	28.9	12.0	37.7	62.6	71.5	57.5	61.9
	GST E-way Bills (Inter State)	12.9	16.2	-5.9	23.1	38.7	45.3	28.6	35.5
	Tourist Arrivals	-37.8				-37.8			
Construction	Steel Consumption	14.3	11.7	11.1	13.4	2.3	11.8	14.4	24.4
	Cement Production	1.8	12.4	-4.3		18.6	20.8	13.1	
PMI Index	Services	57.2	54.3	55.1	56.4				

Sources: CMIE; CEIC; IHS Markit; SIAM; Airports Authority of India; and Joint Plant Committee.

growth potential of the economy is worth noting. As a part of *Atmanirbhar Bharat* in the agricultural sector, the Government of Assam has launched the Assam Millet Mission for raising nutrition quotient and doubling farmers' income. With a view to promoting crop diversification and increasing the production of non-paddy crops and high value crops, the Government of Odisha has launched a new Crop Diversification Programme in 2022-23. Kerala is moving towards meeting its target of setting up one lakh MSMEs in the current financial year, with more than 80,000 MSMEs getting registered in the first seven months of 2022-23. The Asian Development Bank (ADB) approved a US\$350 million loan to improve the connectivity of key economic areas in Maharashtra. The Telangana state government opened 8 medical colleges. The Uttar Pradesh Government launched its Industrial Investment and Employment Promotion Policy 2022 to actualise the state's goal of becoming a one trillion dollar economy.

Inflation

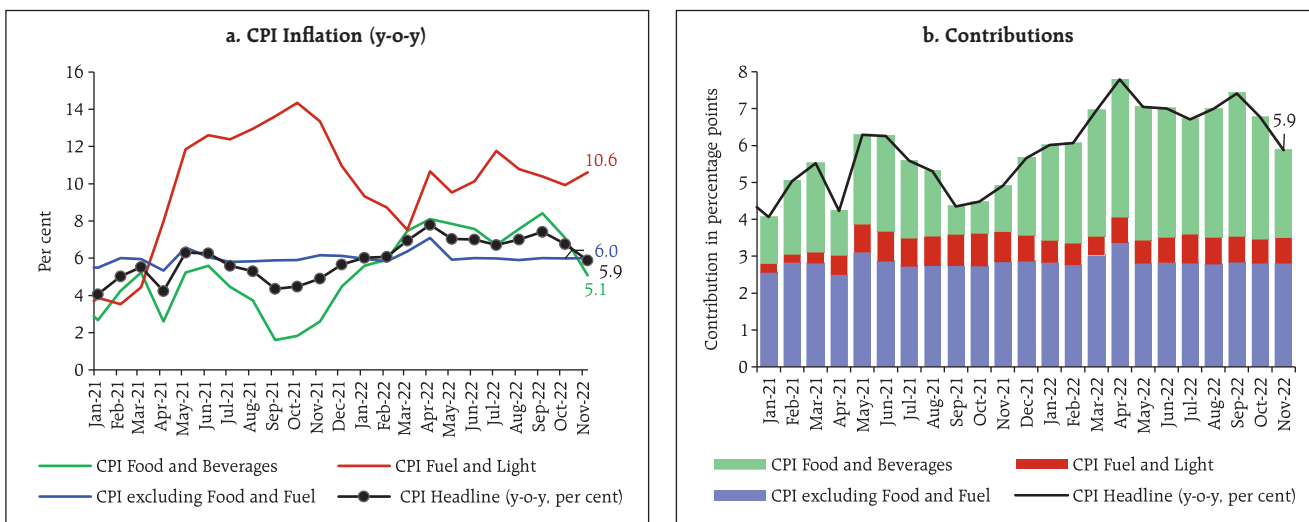
The provisional data released by the National Statistical Office (NSO) on December 12, 2022, showed that inflation, as measured by y-o-y changes in the all-

India consumer price index (CPI), moderated to 5.9 per cent in November from 6.8 per cent in October. The easing was primarily driven by the sharp moderation in food inflation (Chart 38a and 38b). The index declined by 11 bps month-on-month (m-o-m), which along with a favourable base effect (month-on-month change in prices a year ago) of 73 bps, resulted in a fall in headline inflation by around 90 bps between October and November.

The m-o-m decline in prices was of the order of 72 bps within the food and beverages group, which more than offset the positive price momentum of 44 bps in the fuel group and 42 bps in the core (excluding food and fuel) category. Among major sub-groups, vegetables prices declined by 8.3 per cent m-o-m whereas egg prices increased 6.1 per cent (Chart 39).

The sharp softening in CPI food inflation to 5.1 per cent in November from 7.1 per cent in October came from a favourable base effect of 119 bps along with a decline in price momentum of 72 bps. In terms of sub-groups, inflation softened the most in respect of vegetables (largest decline in inflation since December 2020), followed by fruits. On the other

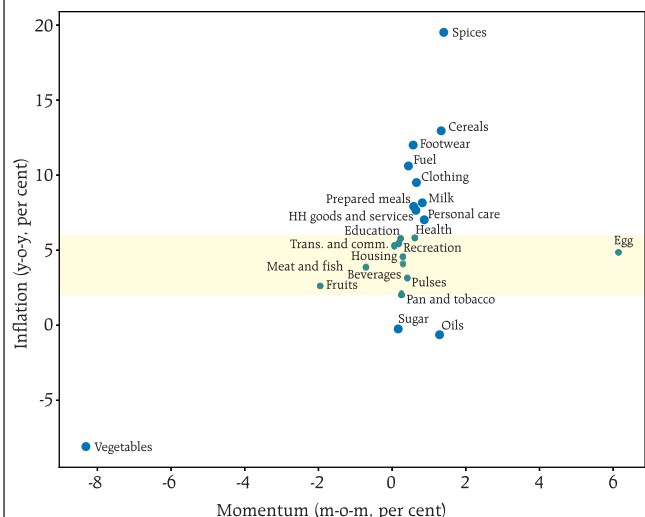
Chart 38: Trends and Drivers of CPI Inflation



Note: CPI inflation for April-May 2021 was computed based on imputed CPI indices for April-May 2020.

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

Chart 39: Annual Inflation (y-o-y) and Momentum (m-o-m) across Sub-groups



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

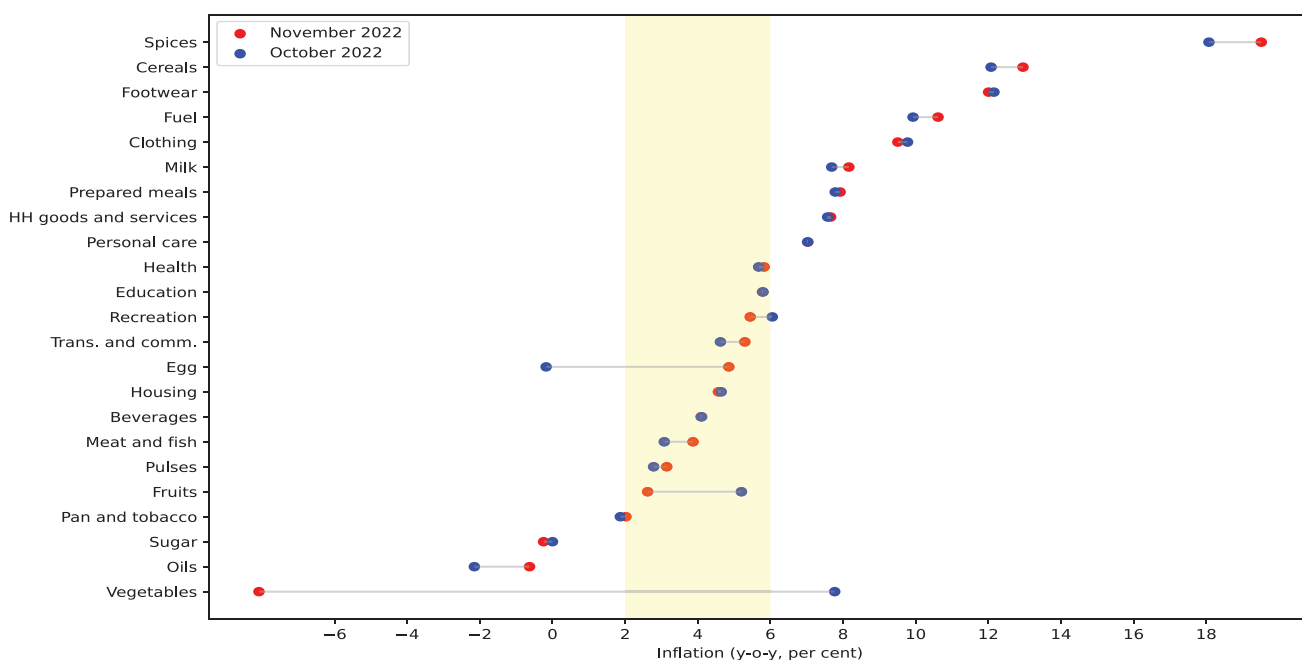
hand, inflation edged up for cereals, prepared meals, protein-based goods (pulses, eggs, meat and fish, and milk) and spices. Edible oils registered a lower rate of deflation, despite a sequential pick-up in prices (Chart 40).

Inflation in the fuel and light group edged up to 10.6 per cent in November from 9.9 per cent in October. The increase was mainly led by electricity prices (on a year-on-year basis) emerging out of deflationary zone after a year. While inflation for liquified petroleum gas (LPG) remained steady, kerosene (Public Distribution System) inflation continued to soften for the fourth consecutive month. The fuel group with a weight of 6.8 per cent in the CPI basket contributed 12.1 per cent of headline inflation in November.

CPI core inflation continued to remain steady at 6.0 per cent for the third consecutive month. While inflation in sub-groups such as in pan, tobacco and intoxicants, household goods and services, health, and transport and communication registered an increase, recreation and amusement, clothing and footwear sub-groups witnessed some moderation. Inflation in key services such as education, housing and personal care and effects remained steady.

In terms of regional distribution, rural inflation at 6.09 per cent was higher than urban inflation

Chart 40: Annual Inflation across Sub-groups (October vs November 2022)



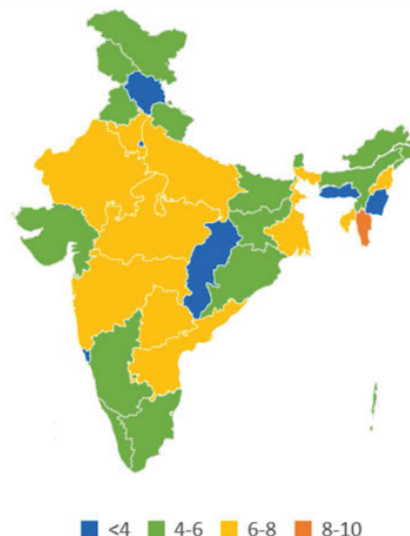
Sources: National Statistical Office (NSO); and RBI staff estimates.

(5.68 per cent) in November 2022. Among the states, only Mizoram experienced inflation in excess of 8 per cent whereas Chhattisgarh, Delhi, Goa, Himachal Pradesh, Manipur and Meghalaya recorded inflation below 4 per cent (Chart 41).

High frequency food price data for December so far (December 1-12) from the Department of Consumer Affairs (DCA) point to an increase in wheat and *atta*, and rice prices. Among key vegetables, prices of onions, potatoes and tomatoes softened. Pulses prices registered a broad-based decline except for *moong* (Chart 42).

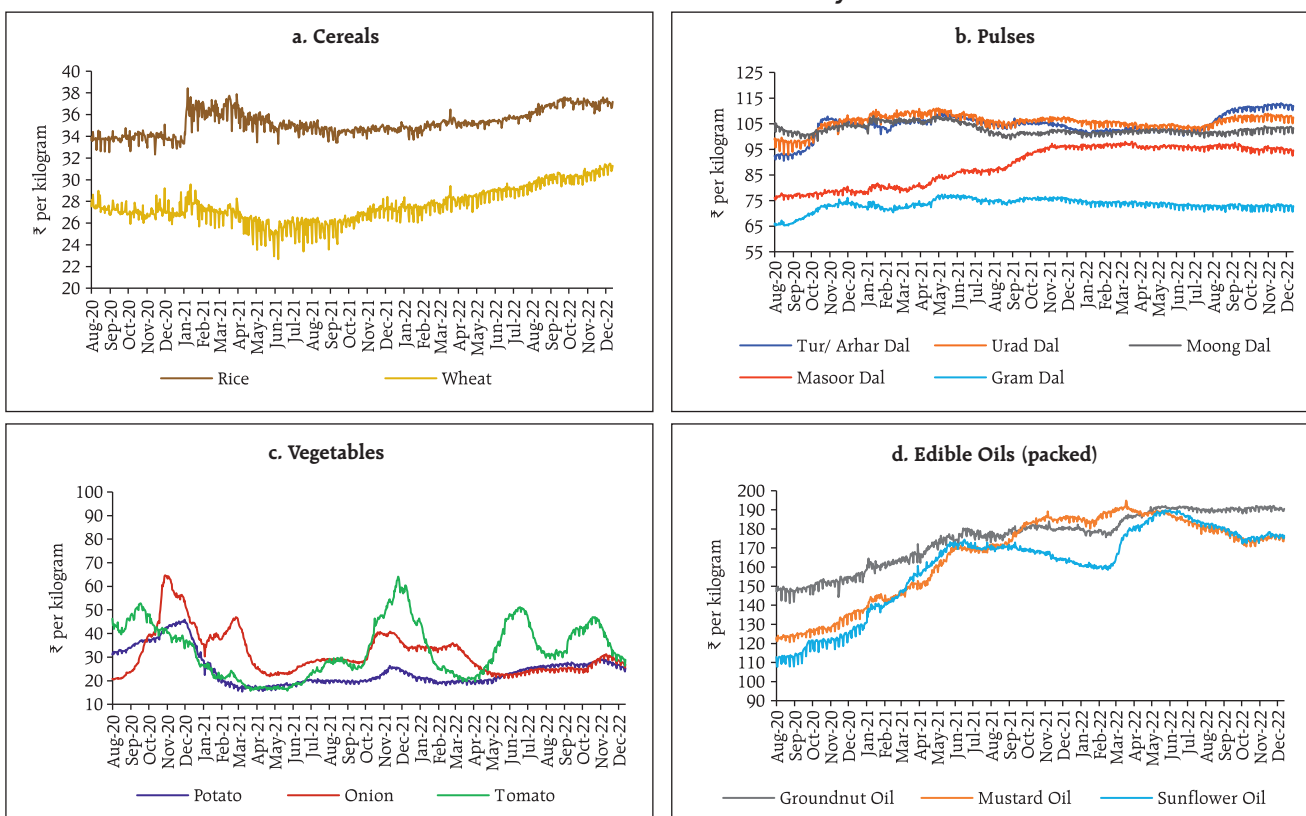
Retail selling prices of petrol and diesel in the four major metros remained steady in December so far. While LPG prices were kept unchanged, kerosene prices marginally decreased in December (Table 3).

Chart 41: Spatial Distribution of Inflation November 2022 (CPI- Combined, y-o-y)

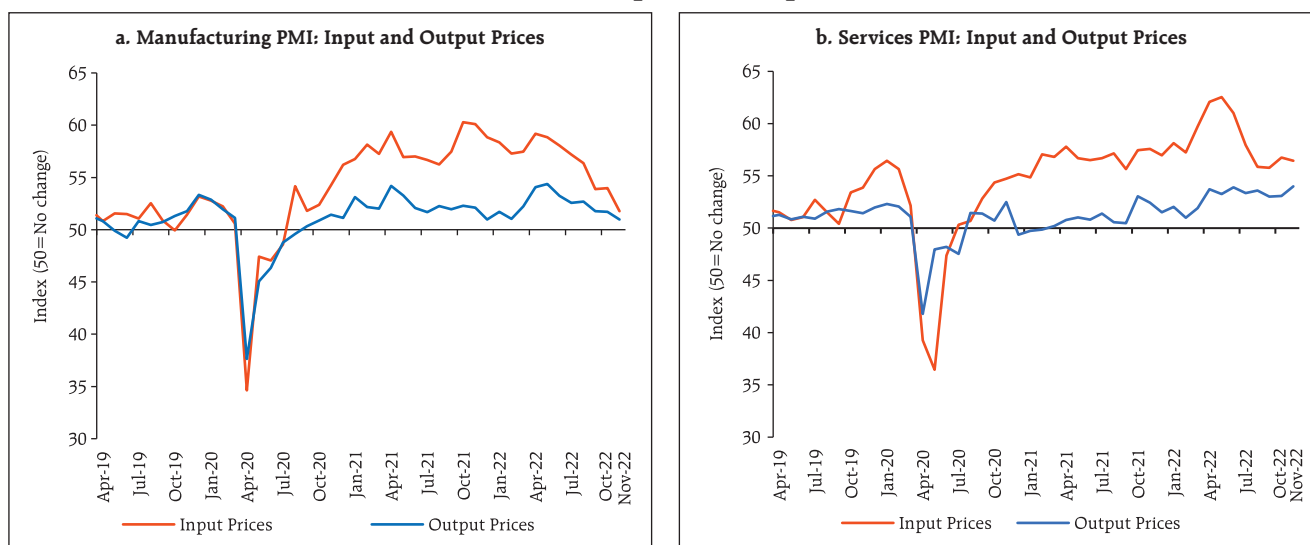


Source: Ministry of Statistics and Programme Implementation, GoI.

Chart 42: DCA Essential Commodity Prices



Sources: Department of Consumer Affairs, GoI; and RBI staff estimates.

Chart 43: PMI: Input and Output Prices

Source: S&P Global.

Input cost pressures, as reflected in the PMIs, increased across manufacturing and services in November 2022, with cost conditions turning more adverse in services. Selling prices also edged up across manufacturing and services, with the services sector registering price increases higher than the long-run average. Manufacturing firms, on the

other hand, registered muted output price increases (Chart 43).

The all India house price index (HPI) recorded a moderate increase of 0.4 per cent in Q2:2022-23 on a sequential (q-o-q) basis and 4.5 per cent rise on an annual (y-o-y) basis during Q2:2022-23 (Chart 44).

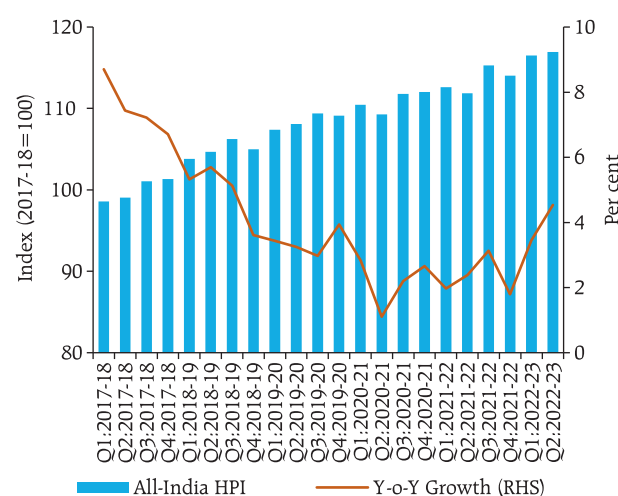
Table 3: Petroleum Products Prices

Item	Unit	Domestic Prices			Month-over-month (per cent)	
		Dec-21	Nov-22	Dec-22 ^	Nov-22	Dec-22 ^
Petrol	₹/litre	102.93	102.92	102.92	0.0	0.0
Diesel	₹/litre	90.51	92.72	92.72	0.0	0.0
Kerosene (subsidised)	₹/litre	38.68	59.38	59.00	3.2	-0.6
LPG (non-subsidised)	₹/cylinder	910.13	1063.25	1063.25	0.0	0.0

^: For the period December 1-12.

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.

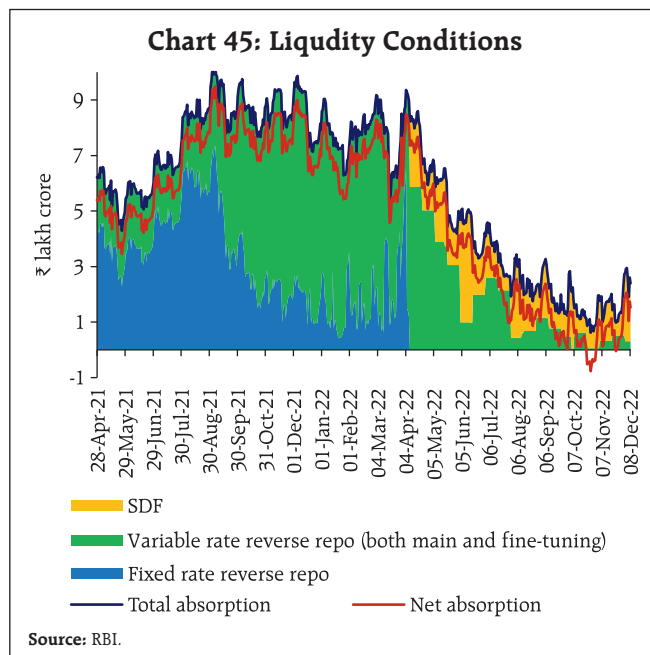
Sources: IOCL; Petroleum Planning and Analysis Cell (PPAC); and RBI staff estimates.

Chart 44: Movement of House Price Index**Note:** Data for Q2:2022-23 is provisional.**Sources:** House prices data from registration authorities of state governments and author's calculations.

IV. Financial Conditions

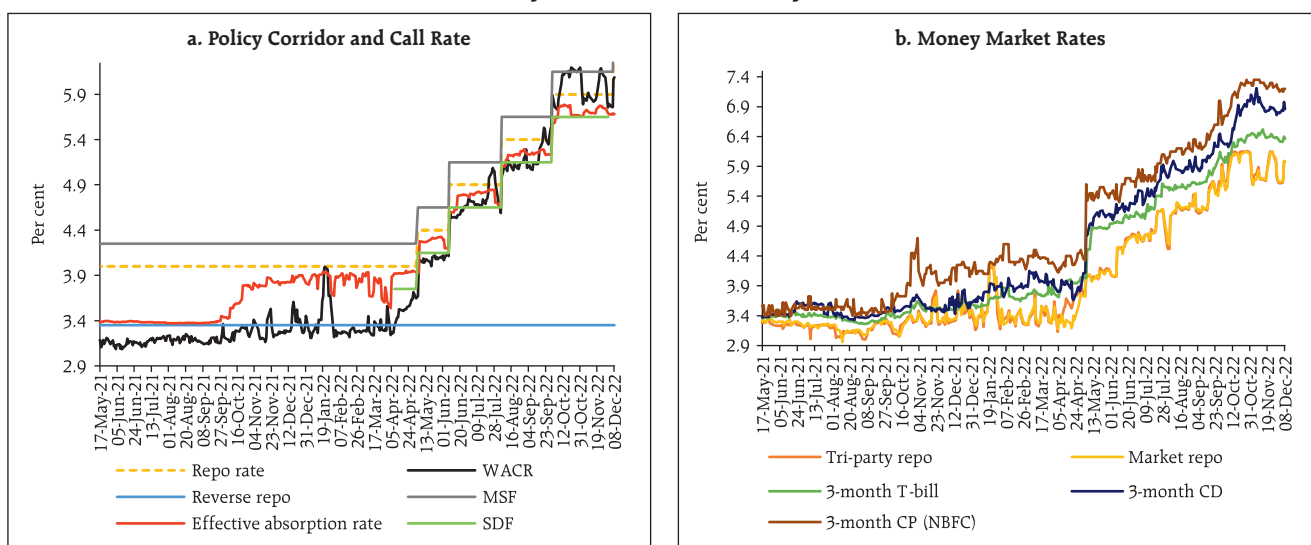
The MPC delivered a widely anticipated rate hike of 35 bps in the December 2022 monetary policy meeting while retaining the stance of withdrawal of accommodation. At the same time, the Reserve Bank remains watchful of evolving liquidity conditions and stands ready to inject liquidity, if required, to meet the productive requirements of the economy. This, however, would be contingent upon a durable turn in the liquidity cycle when banks would move away from holding large balances under the SDF and variable rate reverse repos. Looking ahead, liquidity conditions are likely to draw comfort from higher government spending, moderation in currency leakage and renewed portfolio flows. As part of the graduated move towards normal liquidity operations, market hours were restored - from 9.00 am to 5.00 pm - in respect of call/notice/term money, commercial paper, certificates of deposit and repo in corporate bond segments of the money market as well as for rupee interest rate derivatives.

Higher government spending and the return of foreign portfolio investor (FPI) inflows eased liquidity conditions in the banking system in the second half of November through December 11, 2022. Consequently, average daily absorption under the liquidity adjustment facility (LAF) increased to ₹1.9 lakh crore during November 15 through December 11, 2022 from ₹1.3 lakh crore during mid-October to November 14 (Chart 45). Of the daily average surplus liquidity during November 15 to December 9 2022, ₹1.5 lakh crore has been absorbed through the overnight standing deposit facility (SDF), while the remaining was mopped up through variable rate reverse repo (VRRR) auctions. On a net basis (adjusted for repo and marginal standing facility (MSF)), liquidity absorption averaged ₹1.0 lakh crore during the period under review, increasing from ₹0.25 lakh crore in the preceding period. As liquidity conditions improved, banks' recourse to the MSF moderated



to an average of ₹0.03 lakh crore during the second half of November through December 11, 2022 from ₹0.18 lakh crore during mid-October to November 14. The two fortnightly VRRR auctions of ₹1.5 lakh crore each on November 18 and December 2 received a lukewarm response of ₹52,065 and ₹31,234 crore, respectively. Banks tended to avoid locking in large amounts before the policy announcement in anticipation of rate hikes.

Reflecting the improvement in systemic liquidity, the weighted average call rate (WACR) eased to 5.96 per cent (on an average) during mid-November to December 11 as compared to 6.03 per cent during late October to mid-November 2022 (Chart 46a). In tandem, rates in the collateralised segment also softened, with triparty and market repo rates trading on average 10 bps each, respectively, below the policy repo rate. Across the term money segment, rate on 3-month treasury bill (T-bill), 3-month certificates of deposit (CDs) and 3-month commercial paper (CPs) traded 17 bps, 64 bps and 102 bps, respectively, above the MSF rate (Chart 46b). The average risk premia in the money market (measured as the spread of 3-month CP rate *minus* 91-day treasury bill rate) at 84 bps during

Chart 46: Policy Corridor and Money Market Rates

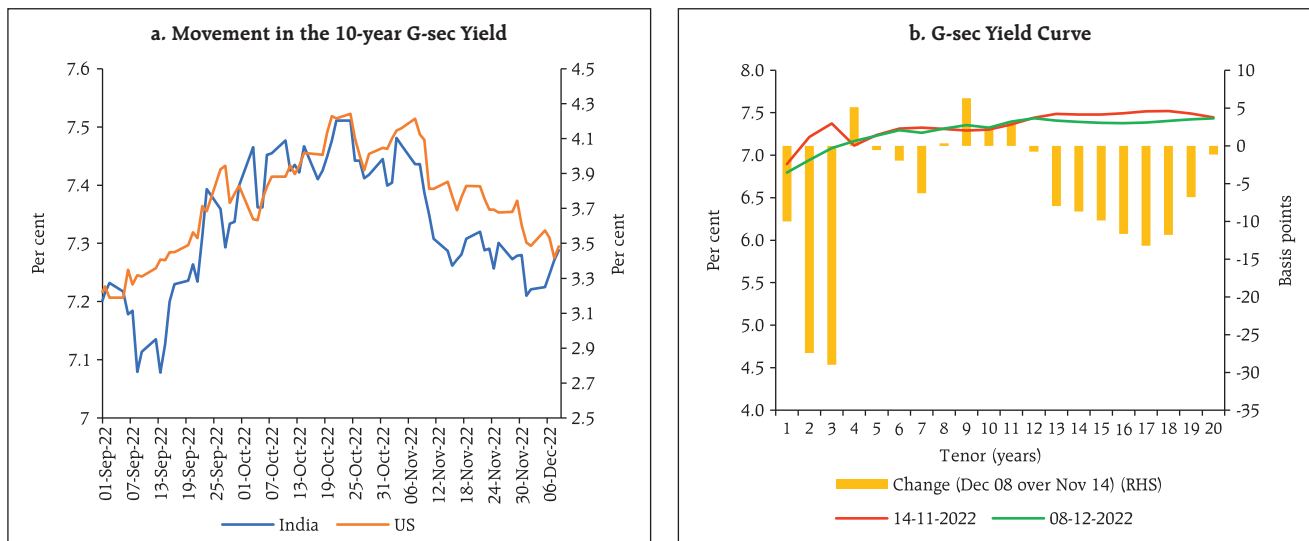
Sources: RBI; Bloomberg; and RBI staff estimates.

November 15-December 9 was similar to 88 bps during the period October 15-November 14, 2022 reflecting stable funding conditions in the money market. In the primary market, fund mobilisation through CD issuances has been robust at ₹3.96 lakh crore during the year so far (up to December 2), higher than ₹0.78 lakh crore for the corresponding period a year ago. This reflects banks' additional demand for funds to meet the funding gap between buoyant credit offtake and relatively modest deposit growth. On the other hand, CP issuances have declined to ₹9.3 lakh crore during the year so far (up to November 30) from ₹14.1 lakh crore for the corresponding period a year ago, as the appetite for bank credit improved.

In the fixed income market, bond yields extended a softening bias in tandem with the easing of US treasury yields and the decline in international crude oil prices. The rally in the bond market was fuelled by the moderation of inflation in India and the US, coupled with a growing consensus over a slower pace of rate hikes. The Indian benchmark yield on the 10-year G-sec softened from a high of 7.51 per cent at the close on October 21 to

7.30 per cent on December 9, 2022 (Chart 47a). In response to the monetary policy announcement on December 7, the yield on the 10-year G-sec hardened intermittently before closing only 2 bps higher than the previous day's close at 7.27 per cent. The muted reaction in the bond market suggests that the action was largely priced in by market participants. Across the curve, G-sec yields declined sharply, particularly for the short and long-end segment, even as the mid-segment registered a more modest decline (Chart 47b). While long-term yields have been influenced by global factors during the current policy tightening cycle, domestic policy measures seem to have a larger bearing on short-term rates.

Following G-sec yields, corporate bond yields too generally softened, while risk spreads exhibited mixed movements across the rating spectrum (Table 4). Fund raising through corporate bond issuances jumped to ₹76,563 crore during November 2022 from ₹36,751 crore in October 2022. Softening rates on corporate bond papers bode well for issuances as the demand for funds is expected to stay robust as growth gathers momentum.

Chart 47: Developments in the G-sec Market

Sources: Bloomberg; CCIL; and RBI staff estimates.

Reserve money (RM) excluding the first-round impact of change in cash reserve ratio (CRR) rose by 7.7 per cent on a y-o-y basis as on December 2, 2022 (7.9 per cent a year ago) (Chart 48). Currency in circulation (CiC) – the largest component of RM – recorded a growth of 8.0 per cent (7.6 per cent a year ago). Money supply (M_3) grew by 8.9 per cent as on

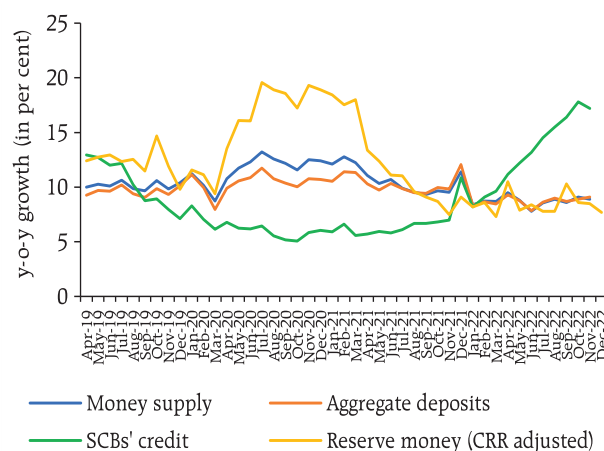
November 18, 2022 (9.5 per cent a year ago), primarily driven by its largest component – aggregate deposits with banks, which grew by 9.1 per cent (9.8 per cent a year ago). Scheduled commercial banks' (SCBs') credit has registered double digit growth since April 2022 and stood at 17.2 per cent as on November 18, 2022 (7.0 per cent a year ago).

Table 4: Financial Markets - Rates and Spread

Instrument	Interest Rates (per cent)			Spread (bps) (Over Corresponding Risk-free Rate)		
	Oct 14, 2022 – Nov 14, 2022	Nov 15, 2022 – Dec 08, 2022	Variation (in bps)	Oct 14, 2022 – Nov 14, 2022	Nov 15, 2022 – Dec 08, 2022	Variation (in bps)
1	2	3	(4 = 3-2)	5	6	(7 = 6-5)
Corporate Bonds						
(i) AAA (1-year)	7.77	7.81	4	82	87	5
(ii) AAA (3-year)	7.87	7.69	-18	45	43	-2
(iii) AAA (5-year)	7.93	7.79	-14	42	49	7
(iv) AA (3-year)	8.60	8.40	-20	119	114	-5
(v) BBB-(3-year)	12.25	12.06	-19	484	480	-4

Note: Yields and spreads are computed as monthly averages.

Sources: FIMMDA; and Bloomberg.

Chart 48: Monetary and Credit Aggregates

Note: 1. Data pertain to last reporting Friday of every month for money supply, aggregate deposits and bank credit; and last Friday of every month for reserve money.

2. Latest data for reserve money pertain to December 2, 2022; whereas for money supply as on November 18, 2022.

Source: RBI.

In response to the policy rate hike of 190 bps, SCBs have increased their 1-year median marginal cost of funds-based lending rate (MCLR) by 95 bps during the period May to November 2022. The magnitude of transmission to weighted average lending rates (WALR) on fresh and outstanding rupee loans has further improved to 117 bps and 63 bps, respectively, during May-October 2022. The weighted average term deposit rate (WADTDR) on outstanding rupee deposits has recorded an increase of 46 bps during the same period (Table 5).

With the ongoing growth in credit demand surpassing SCBs' deposit growth since February 2022, major banks have hiked their deposit rates. Banks have come up with various special deposit schemes for different tenors with comparably higher rates than the regular schemes to attract more retail deposits. The median term deposit rates on fresh retail deposits (card rates) of SCBs increased by 67 bps between May and November 2022. The extent of pass-through to deposit rates has been higher for longer tenor maturities, with the highest being for 1-3 years tenors (Chart 49).

Table 5: Transmission to Deposit and Lending Rates of SCBs

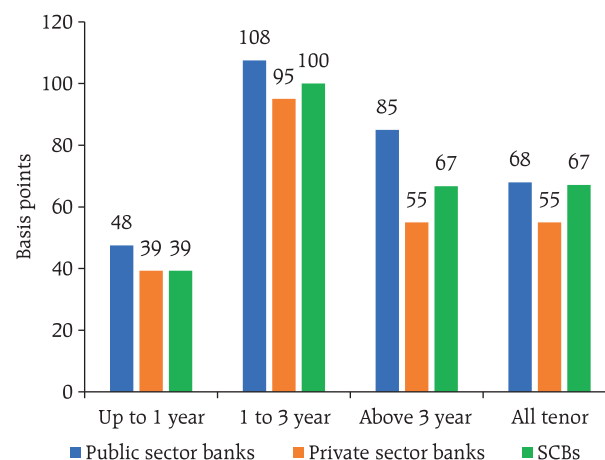
(Variation in basis points)

	February 2019 to March 2022 (Easing Phase)	May to November 2022 (Tightening Phase)
Policy Repo Rate	-250	190
WALR - Fresh Rupee Loans	-232	117
WALR - Outstanding Rupee Loans	-150	63
1-Year Median MCLR	-155	95
WADTDR - Outstanding Deposits	-188	46
Median Retail Term Deposit Rate (Card Rate)	-208	67

Note: Latest data on WALRs and WADTDRs pertain to October 2022.
WALR: Weighted Average Lending Rate;
WADTDR: Weighted Average Domestic Term Deposit Rate; and
MCLR: Marginal Cost of Funds-based Lending Rate.

Source: RBI.

Chart 49: Maturity-wise Transmission to Fresh Term Retail Deposit Rates (May-November 2022)



Note: Transmission is calculated based on card rates on new retail term deposits of banks.

Source: RBI staff estimates.

Amidst bouts of volatility, domestic equity markets touched a string of new highs during November, supported by rising expectations that domestic inflation may have peaked. Higher foreign portfolio investor (FPI) flows amidst improved risk sentiments and a less hawkish US Fed also helped the markets. During the first half of December, markets have moderated amid increased uncertainty regarding future Fed policy path following stronger-than-expected US payrolls data. Overall, the BSE Sensex increased by 2.4 per cent since the start of November to close at 62,182 on December 09, 2022.

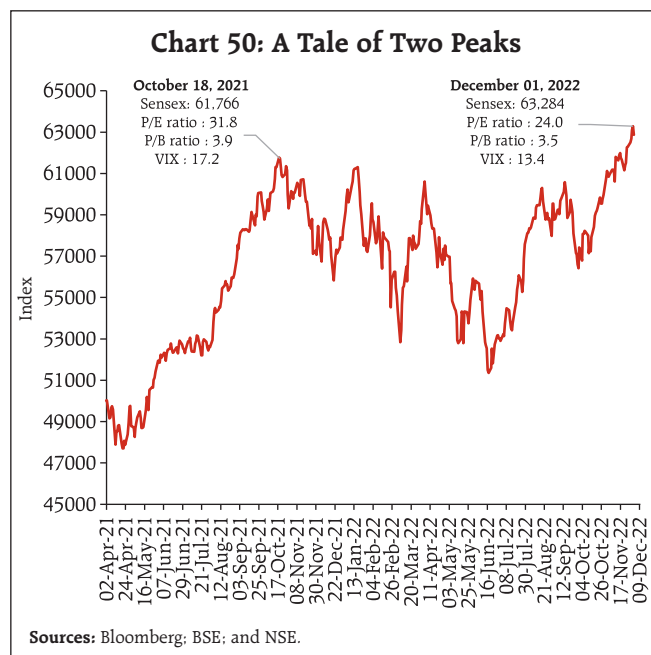
Prior to the fresh peak of 63,284 reached on December 1, 2022, the Sensex had achieved another all-time high of 61,766 last year on October 18, 2021 which was aided by the gradual reopening of the world economy after the tapering of the delta wave of the COVID-19 pandemic and rising vaccination rates. Since then, inflationary concerns, aggressive monetary tightening, and the raging geopolitical conflict in Ukraine have halted the rally in the Sensex. A closer comparison of the two peaks shows that the current

peak is distinguished by lower expected volatility (VIX) and relatively moderate valuation multiples (Chart 50).

Furthermore, the current peak has been accompanied by underperformance of the broader indices (Chart 51a). Similarly, institutional investor activity highlights the increasing prominence of net domestic institutional investor (DII) flows over those of FPIs (Chart 51b). The trajectory of rising retail participation in equity markets has remained resilient, gauged by the rising number of demat accounts which reached 10.6 crore in November 2022.

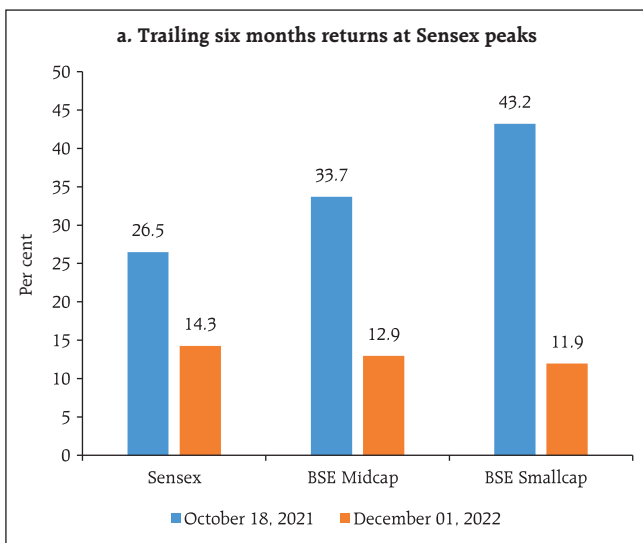
On a sectoral basis, the capital goods sector yielded the highest returns during the six-month period preceding the current peak, highlighting the improvement in investment sentiments. Furthermore, Bankex index returns have surged on encouraging earnings, higher credit growth and sound regulatory parameters (Chart 52).

One of the key differences between the two peaks has been the contrast in the monetary policy outlook in advanced economies. During the previous peak, the implied fed funds rate indicated a tighter monetary policy going forward (Chart 53a). This prognosis



materialised, with the federal funds rate rising 375 bps cumulatively to 3.75-4.0 per cent on November 1, 2022 and impacting equity returns globally. During the current period, however, the implied federal funds rate is expected to peak in mid-2023, indicating a potential end to the rate hike cycle (Chart 53b).

Chart 51: Broader Indices and Institutional flows



Source: Bloomberg.

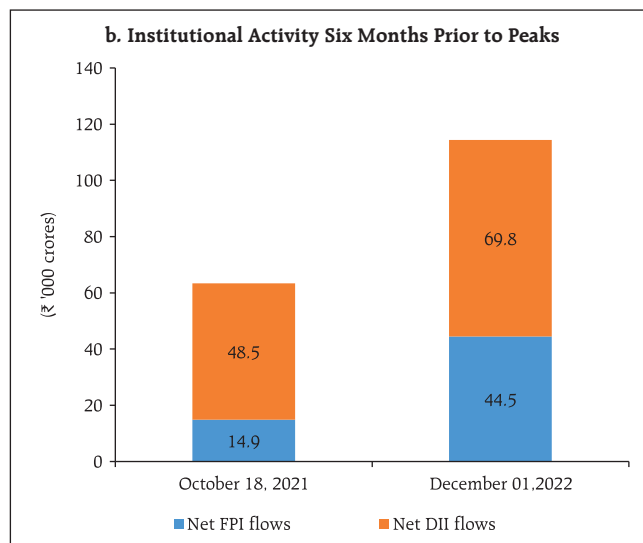
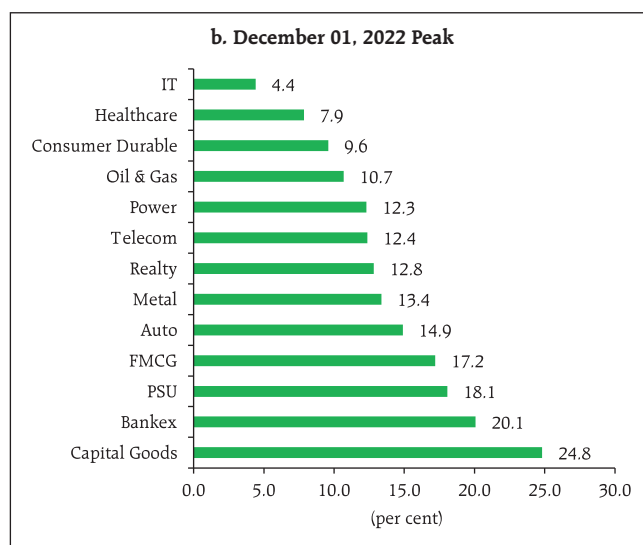
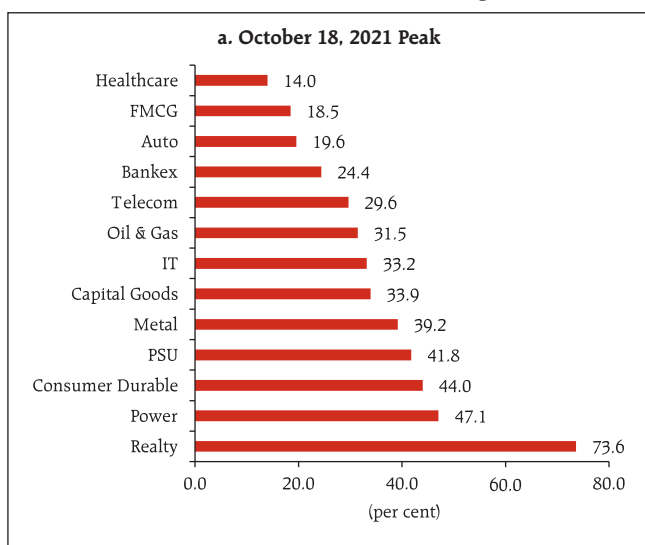


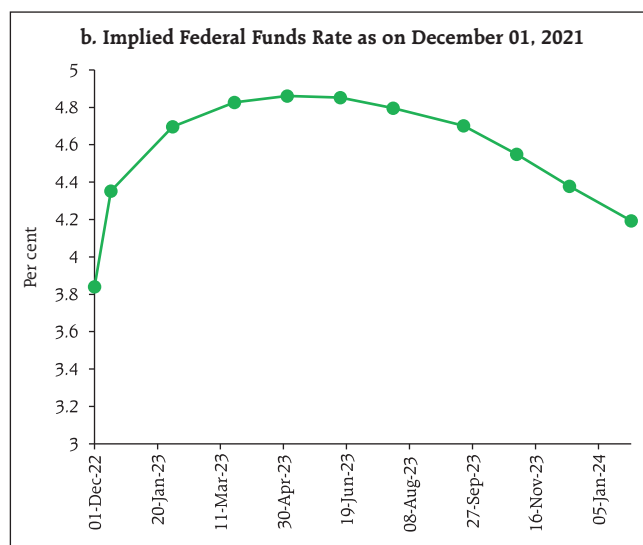
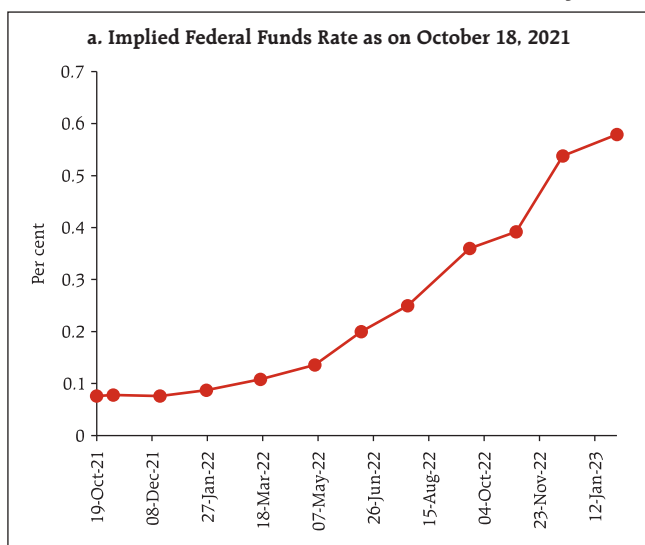
Chart 52: Trailing Six Months Sectoral Returns at Sensex Peaks

Source: Bloomberg.

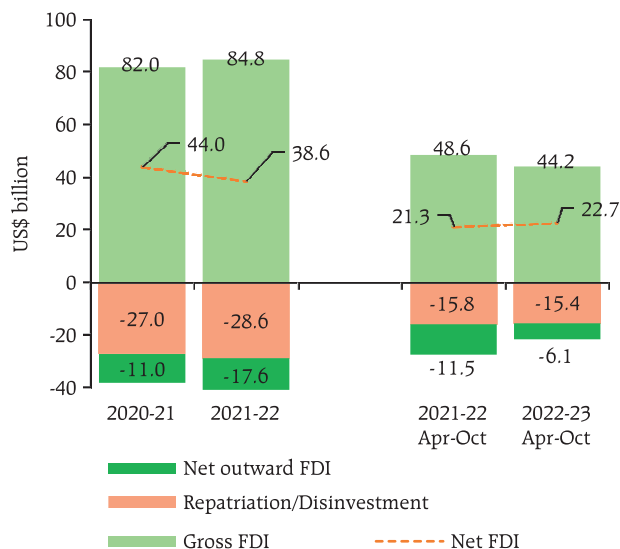
Gross inward foreign direct investment (FDI) moderated to US\$ 44.2 billion during April-October 2022 from US\$ 48.6 billion a year ago (Chart 54). Net FDI, however, increased to US\$ 22.7 billion during this period from US\$ 21.3 billion a year ago, mainly due to a decline in outward FDI by India. The majority of FDI equity inflows was received by manufacturing, retail

and wholesale trade, financial services, computer services and communication services during April-October 2022. Singapore, Mauritius, and the US were major source countries of FDI during this period.

FPIs remained net purchasers in the Indian markets for the second month in succession amidst expectations of slowdown in the pace of rate hikes

Chart 53: Monetary Policy Outlook at the Two Peaks

Source: Bloomberg.

Chart 54: Foreign Direct Investment

Source: RBI.

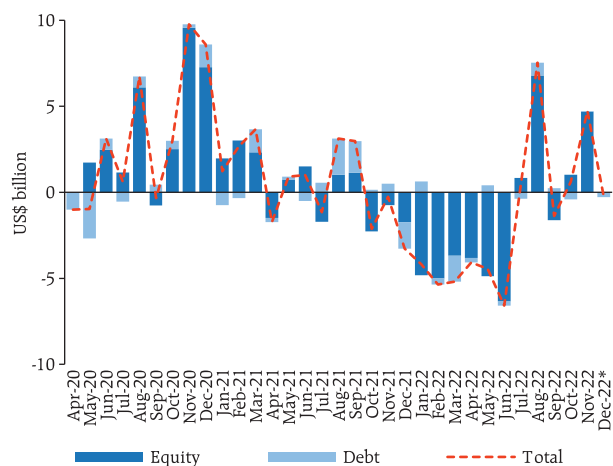
by the US Fed, softening crude oil prices, and steady macroeconomic performance of the domestic economy. Net FPI flows to India were to the tune of US\$ 4.7 billion in November 2022, mainly in the equity market (Chart 55). However, in December 2022 (up to 13th), Indian markets witnessed FPI outflow of US\$ 0.3 billion. During November 2022, financial services, oil, gas and

consumable fuels, and information technology sectors attracted the bulk of FPI investment in equity market. According to Institute of International Finance (IIF), Indian markets received more FPI investment than other emerging market economies (EMEs), except China and Taiwan, in November 2022.

External commercial borrowing (ECBs) registrations during April-October 2022 stood at US\$ 12.4 billion. Net ECB inflows, however, were negative as principal repayments (US\$ 14.3 billion) exceeded gross disbursements (US\$ 12.3 billion) (Chart 56).

The end use pattern of the ECBs revealed more funds intended for on-lending/sub-lending, followed by funds raised for refinancing of earlier ECBs and for new projects (Chart 57).

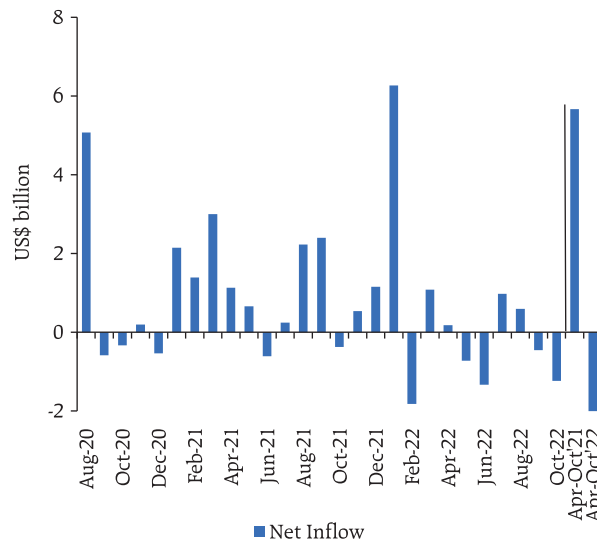
Major global benchmark rates, viz., the London interbank offer rate (LIBOR) and the secured overnight financing rate (SOFR) have increased by 301 bps and 277 basis points (bps), respectively, during April-October 2022. The rise in overall cost of ECB loans, however, was relatively less as the weighted average interest rate spread of ECBs over the benchmark interest rate

Chart 55: Net Foreign Portfolio Investment

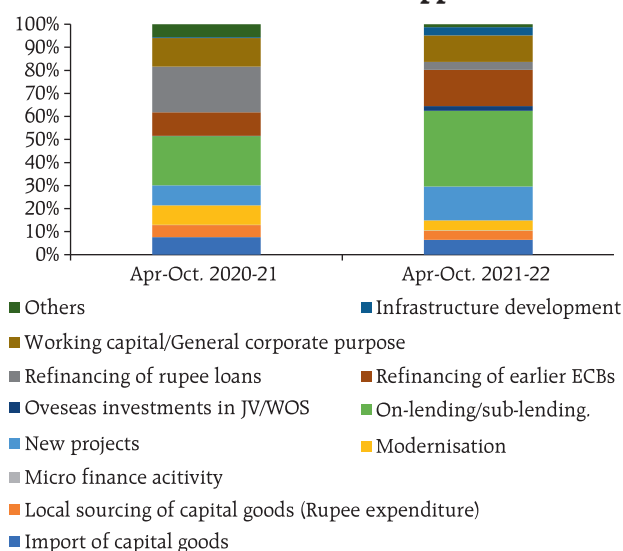
*: Up to December 13, 2022.

Note: Debt includes investments under voluntary retention route (VRR) and hybrid instruments.

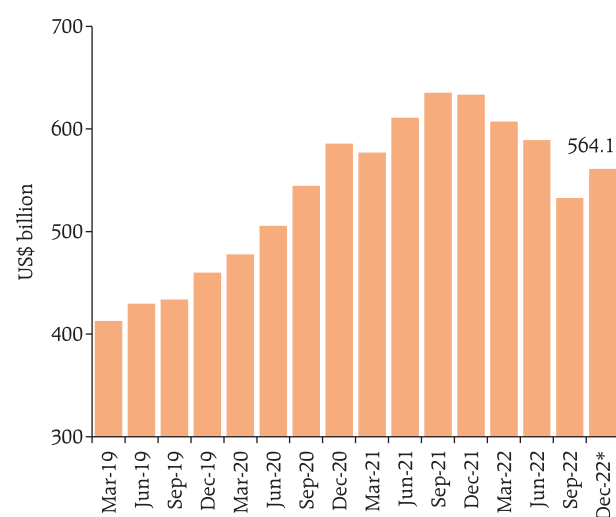
Source: National Securities Depository Limited.

Chart 56: Net ECB Inflows

Source: RBI.

Chart 57: ECB Fund Use Approvals

Source: RBI.

Chart 59: Foreign Exchange Reserves

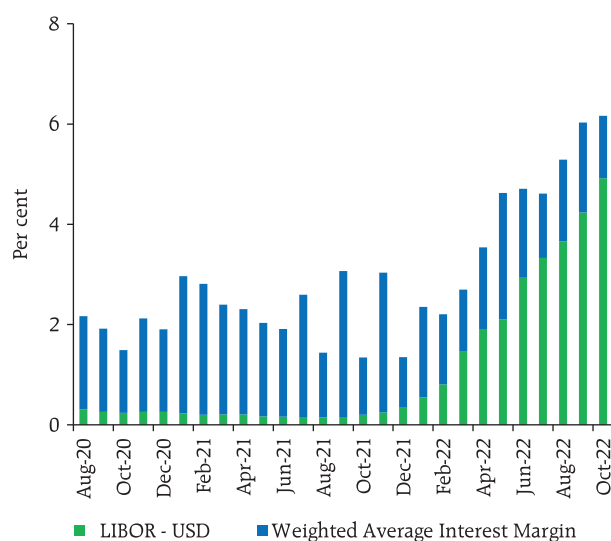
*: As on December 9, 2022.

Source: RBI.

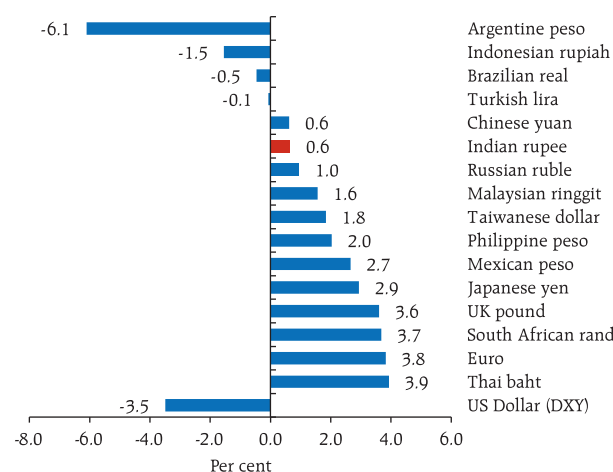
was limited to 170 bps during April-October 2022 (193 bps during Apr-October 2021) (Chart 58).

India's foreign exchange reserves stood at US\$ 564.1 billion as on December 9, 2022 and covered 9.2 months of imports projected for 2022-23 (Chart 59). The reserves have increased by US\$ 31.4 billion since end September 2022.

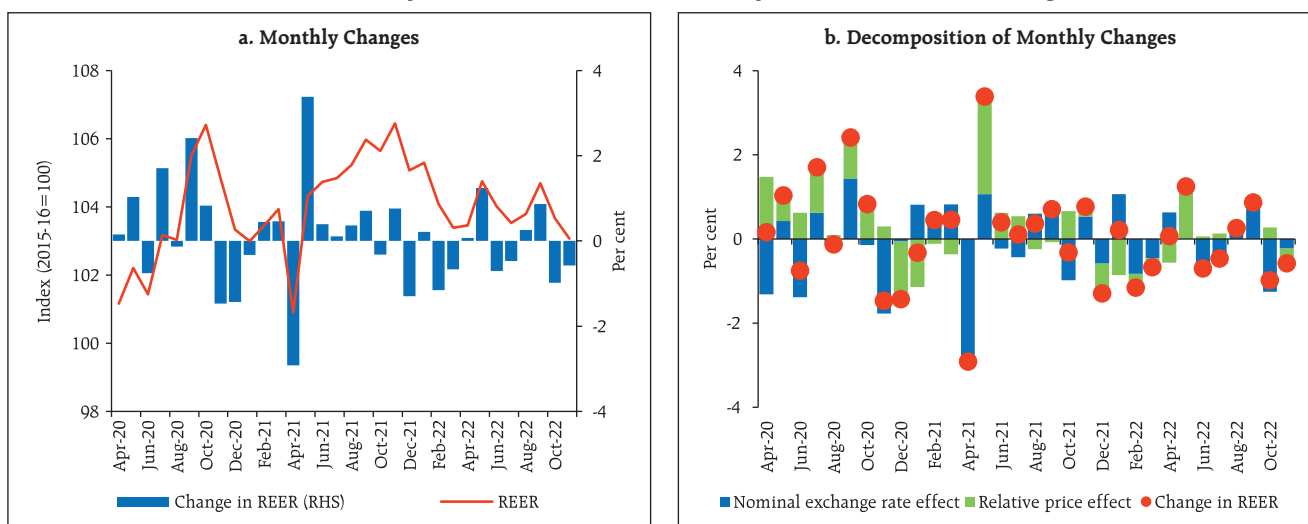
In the foreign exchange market, the Indian rupee (INR) appreciated by 0.6 per cent in November 2022, amidst weakening of the US dollar, softening crude oil prices and net FPI inflows. The INR appreciation was modest compared to most of the other EME currencies (Chart 60).

Chart 58: Overall Cost of ECBs

Source: RBI.

Chart 60: Movements of Indian Rupee and other major currencies against the US Dollar (November 2022, m-o-m)

Sources: FBIL; Thomson Reuters; and RBI staff estimates.

Chart 61: Monthly Movements in 40-Currency Real Effective Exchange Rate

Note: Figures for november 2022 are provisional.

Source: RBI.

In terms of the 40-currency real effective exchange rate (REER), the INR depreciated by 0.6 per cent in November 2022 (m-o-m) (Chart 61).

Payment Systems

In November, digital transactions across payment modes built upon their robust performance during the festival season in October (Table 6). Retail transactions grew impressively owing to positive consumer sentiments¹¹ and a high-spirited wedding season.¹² Bharat Bill Payment System (BBPS)

transactions grew steadily on the back of loan repayments and Fastag segments. Transactions in loan repayments doubled, which is indicative of reviving household finances. This is corroborated by the strong growth observed in the National Automated Clearing House (NACH) debit transactions related to *inter alia* loan repayments, insurance premia and investment in mutual funds. The growth (y-o-y) in the Unified Payments Interface (UPI) was spearheaded by a rise in Person-to-Merchant (P2M) transactions in October and November. This

Table 6: Growth Rates in Select Payment Systems

Payment System	Transaction Volume (Y-o-Y, per cent)				Transaction Value (Y-o-Y, per cent)			
	Oct-21	Oct-22	Nov-21	Nov-22	Oct-21	Oct-22	Nov-21	Nov-22
RTGS	33.2	3.4	24.9	19.9	19.3	14.0	37.5	11.9
NEFT	29.4	27.9	24.1	29.3	10.8	10.1	4.3	18.0
UPI	103.6	73.2	89.4	74.6	99.8	57.1	96.5	54.9
IMPS	35.0	12.0	21.5	12.5	35.0	25.7	31.9	24.7
NACH	31.6	19.4	15.7	6.7	22.0	20.3	7.1	35.9
NETC	75.1	32.1	71.5	33.4	57.1	32.6	51.1	46.2
BBPS	155.6	55.1	148.6	59.2	165.8	56.4	175.3	61.7

Source: RBI.

¹¹ "Consumer Sentiments to sustain elevated levels", CMIE Economic Outlook, November 14, 2022.

¹² "Estimated 32 lakh weddings till Dec 14 with a trade of Rs 3.75 lakh cr", The Economic Times, November 7, 2022.

growth in P2M transactions with a high transaction volume under merchant categories like groceries and supermarkets, restaurants, departmental stores, drug stores and pharmacies signals increasing usage of the UPI for day-to-day purchases. In order to enhance the ease of making payments concerning e-commerce and investments in securities, the Statement on Developmental and Regulatory Policies on December 7, 2022 announced that the capabilities in UPI will be further augmented by introducing a single-block and multiple-debits functionality. Also, the scope of Bharat Bill Payment System (BBPS) is being expanded to include additional categories of payments and collections, both recurring and non-recurring, and for all category of billers (businesses and individuals).

The Reserve Bank launched the first pilot of the retail digital rupee (e₹-R) on December 1, 2022 covering select locations in a closed user group.¹³ The e₹-R will provide cash-like trust, safety and settlement finality while allowing users to transact digitally. The Payments Council of India¹⁴ launched 'Project *Pratima*', an initiative aimed at standardising icons across payment apps and platforms to enhance ease of use for consumers.¹⁵

V. Conclusion

As we turn the page on a turbulent year with 2022 drawing to a close, it is worthwhile dialling back to various monthly editions of the State of the Economy (SoE) during the year and the milestones they were sentinel to. It was an eventful journey – the world and India confronted daunting challenges in succession, with resilience and hope.

In January 2022, Omicron's tsunami threatened to derail the path of recovery, but we assessed that

Omicron may turn out to be more of a flash flood, reposing our faith on brightened near-term prospects. In February, we observed with cautious optimism that economic activity in India was recouping from a brief spell of moderation. The Union Budget for 2022-23 set the tone for a durable and broad-based revival with renewed emphasis on public investment through infrastructure development. By March, however, we had to completely alter our assessment as war clouds broke over Ukraine and fundamentally altered the global macroeconomic and financial landscape. We remained rooted in our conviction that India's macroeconomic fundamentals are strong amidst the ominous tides of global spillovers. In April, it became clear that the global economy is in the throes of a geo-political cataclysm. Choked supplies and mounting commodity prices, especially of food and energy, stoked inflationary pressures, exacerbating policy trade-offs for central banks. India too experienced tremors from these developments which were evident in inflation prints and balance of payments conditions. Nonetheless, domestic conditions provided comfort as the removal of mobility restrictions alongside a broadening of vaccination coverage helped economic activity to return to speed. In May, the global growth outlook turned grimmer as geopolitical tensions lingered, commodity prices remained elevated and withdrawal of monetary accommodation gathered pace. We recognised that inflation risks had become more accentuated for India, but that the recovery remains resilient in spite of global spillovers.

In June, our SoE noted that domestic macroeconomic conditions were weathering global headwinds. We also dwelt upon expectations from monetary policy actions undertaken till then to fight inflation so as to offer clarity on what the RBI seeks to achieve with policy actions. Our view was that the rate and liquidity actions demonstrate that the RBI cares about people's perceptions, thereby anchoring their faith in RBI's commitment to price stability

¹³ https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=54773

¹⁴ It is a body of payments and settlement system participants in India.

¹⁵ "PCI introduces Project Pratima to standardise payments across platforms", The Hindu Business Line, December 2, 2022.

and strengthening the foundations of growth. Hence we held the firm belief that second-round effects of the inflation surge would be prevented from getting entrenched. In July, we reiterated our optimism that the Indian economy showed resilience and dynamism in spite of the geopolitical situation and high risk aversion in financial markets. As if in sympathy, inflation in India came off its April peak, international commodity prices eased along with abatement of supply chain pressures, but central banks across the world remained engaged in the most aggressive monetary policy tightening in decades. We assigned high risk to global spillovers. Heightened uncertainty, commodity prices, geopolitical conditions and monetary policy normalisation were identified as the main factors depressing the outlook. In August, we hypothesised that there would be a grudging and uneven easing of the momentum of price changes. We also communicated that India deals with multiple challenges from a position of strength imparted by the resilience of its macro-fundamentals and buffers. We recognised a structural change in the policy environment brought about by a monetary policy framework that explicitly accords primacy to the goal of price stability.

In September our assessment showed that loss of momentum in global economic activity may be taking the edge off inflation and that the Indian economy is poised to shrug off the modest tapering of growth

momentum in the first quarter of 2022-23 as aggregate demand firmed up. We reiterated that at this critical juncture, monetary policy has to perform the role of a nominal anchor for the economy as it charts a new growth trajectory. The focus should be on being time consistent in aligning inflation with the target. In October, broader economic activity was assessed to expand further. We cautioned though that only time will tell whether India is decoupling from the global growth slowdown.

In November, we saw formidable global headwinds confronting the domestic macroeconomic outlook as India geared up to a leadership role in the world stage by assuming the mantle of the G20 Presidency for 2023. We concluded that as the winds shift, the worst seems to be losing pace as we forge ahead.

In December, as India engages in setting out its priorities and deliverables under its G20 Presidency, there is a sense that perhaps her time in the centre of the world's stage has arrived. As the third largest economy in PPP terms, and the fifth largest in terms of market exchange rates, India accounts for 3.6 per cent of G20 GDP while its share in real (PPP) terms is much higher at 8.2 per cent. In 2023, India is projected to be among the fastest growing economies within G20. Our priorities under the G20 Presidency encapsulate a vision of unity and interconnectedness. They will also reflect the priorities of the global South: One Earth, One Family, One Future.

Anatomy of Inflation's Ascent in India

by Michael Debabrata Patra,
Asish Thomas George, G V Nadhanael,
Joice John[^]

This paper attempts to provide a detailed analysis of the inflation trajectory in India post February 2022. We explore disaggregated data, sources of price pressures month to month, the distribution of inflation and its moments, and other statistical measures. Macro determinants of inflation are analysed through the lens of a Quarterly Projection Model (QPM). The results show that the initial inflationary surge was caused by successive supply shocks but as their impact wanes, the swing of price pressures from goods to contact-intensive services is generalising inflation and making it persistent.

I. Introduction

In March 2020 when COVID-19 was declared a pandemic, India experienced a once in a century cataclysm. The shock was amplified by the world's strictest lockdown and arguably the biggest migration in human history as migrant workers fled cities in fear of what was then regarded as an urban disease. Directly as a consequence of this massive dislocation in the mobility of goods and services, inflation, which had been maintained in alignment with the target of 4 per cent during September 2016 through March 2020, broke out of the tolerable band and averaged 6.1 per cent in 2020-21.¹ Monetary and fiscal policies went into ultra-accommodative pandemic-mitigation mode and strong supply side measures were unleashed to secure the availability of key inflation-sensitive food staples. As a result,

inflation was pulled back into the tolerance band, averaging 5.5 per cent in 2021-22.

With the worst of the pandemic's two devastating waves having been weathered and unfavourable base effects being up to January 2022, the Monetary Policy Committee (MPC) in its meeting in February 2022 projected average inflation at 4.5 per cent during 2022-23 on ebbing COVID-19 infections, easing supply chain pressures, normal monsoons and global commodity prices moving in a range-bound manner. Little did it know that in a span of two weeks the world would be upended. The course of inflation the world over and in India was altered drastically (Das, 2022).

The precipitation of geopolitical tensions into an outbreak of war in Ukraine completely overturned macroeconomic conditions. International prices of energy, industrial metals and food shot up to unprecedented highs and supply chain disruptions became acute, leading to escalation of cost pressures. Inflation shot up across advanced and emerging economies to levels not seen in four decades. The shock waves spilled over and inflation in India slipped its pre-pandemic moorings, levitating to a peak of 7.8 per cent in April 2022 before easing to an average of 6.8 per cent during May-November 2022. This has triggered accountability procedures mandated by legislation whenever inflation breaches the upper/lower tolerance bands around the target for three consecutive quarters (Chart 1).² By current projections, inflation is forecast to average 6.7 per cent in 2022-23 and 5.2 per cent in the first half of 2023-24.³

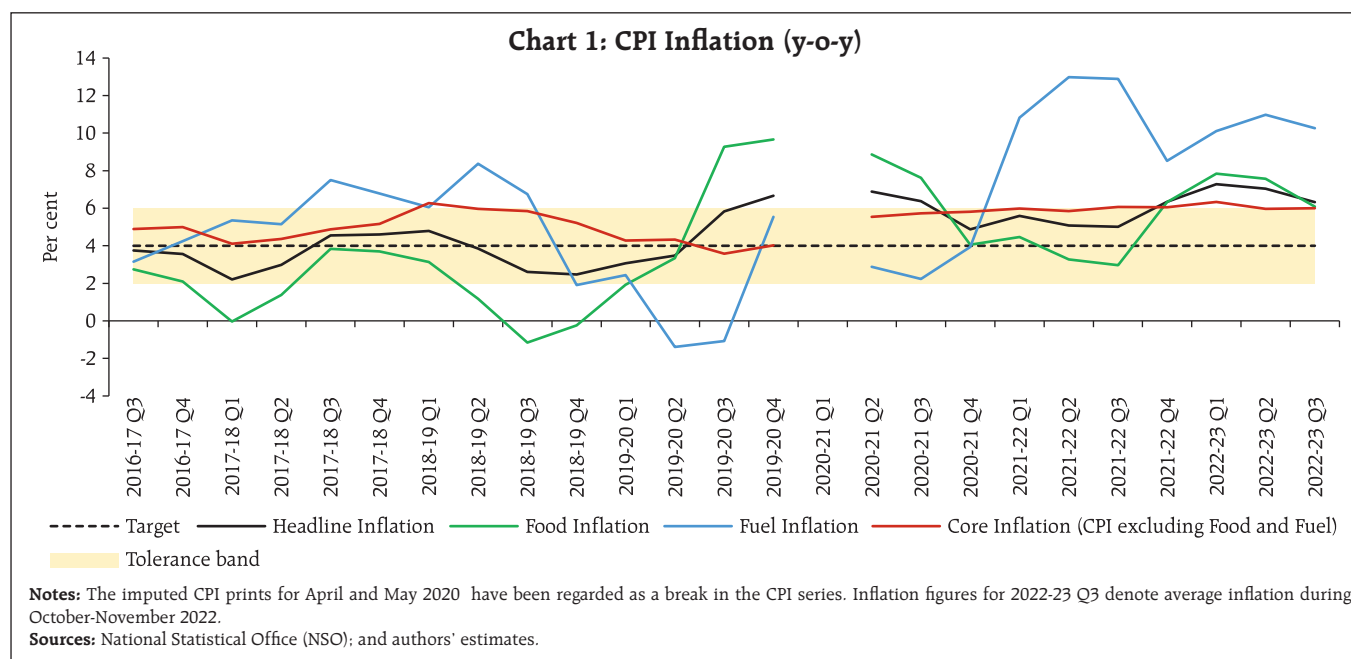
What explains this unusual gravity defying, history defying inflation episode? This paper attempts to provide a detailed analysis of the inflation trajectory in India post February 2022. We explore disaggregated data, sources of price pressures

[^] The authors are from the Reserve Bank of India. The views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

¹ Average for the period June 2020 to March 2021. The imputed CPI prints for April and May 2020 have been regarded as a break in the CPI series.

² A separate meeting of the Monetary Policy Committee (MPC) was held on November 3, 2022 to discuss and draft the report to be sent to the Government by the Reserve Bank of India (RBI).

³ Monetary Policy Statement, December 07, 2022.



month to month, the distribution of inflation and its moments, and statistical measures of diffusion and dispersion against the backdrop of the global and domestic macroeconomic setting. Our quest is for the fundamental factors that are shaping the inflation trajectory.

Our deep dive reveals that the initial inflationary shock was delivered by successive supply shocks, but as their impact waned, a revenge rebound in spending and especially a swing from goods to contact-intensive services, is generalising price pressures and making them persistent. Moreover, with food and fuel prices constituting 55 per cent of the consumer price index (CPI), households' expectations of future inflation, which are influenced by recent movements in food and fuel prices, could also lead through cost of living considerations to higher wages and higher goods and service prices (Patra, 2022).

The rest of the paper is organised into 5 sections. The next section disentangles the drivers and identify the proximate causes of the inflation surge. An examination of statistical properties of the distribution of inflation, including cyclical and

acyclical components, is conducted in section III. Assimilating the inferences gathered from these analyses, Section IV explores the macro determinants of inflation. Section V concludes the paper.

II. Some Stylised Facts

First, the role of the basic blocks – momentum and base effects – in the formation of year on year (y-o-y) CPI inflation⁴ is examined. If the pick-up in inflation is driven by momentum, *i.e.*, month-on-month (m-o-m) changes in the current period, it points to price pressures building up at the margin. On the other hand, if inflation is driven up by base effects (m-o-m changes in prices a year ago), the role of inflation's history comes into play (Table 1).

With the outbreak of the war in Ukraine, strong momentum was unleashed, which completely offset favourable base effects and drove inflation up to a peak in April 2022. Momentum eased in May, allowing the play of favourable base effects to bring down headline

⁴ A change in CPI y-o-y inflation between any two months can be represented as the difference between the month-on-month (m-o-m) change in the price index (momentum) for the current month and the m-o-m change in the price index 12 months earlier (base effect).

Table 1: CPI Inflation: Base Effect and Momentum

(percentage points)

No	Category	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
1	CPI Headline Inflation (per cent)	5.7	6.0	6.1	7.0	7.8	7.0	7.0	6.7	7.0	7.4	6.8	5.9
	1a Change in Headline Inflation (1b+1c)		0.4	0.1	0.9	0.8	-0.7	0.0	-0.3	0.3	0.4	-0.6	-0.9
	1b Momentum		-0.3	0.2	1.0	1.4	0.9	0.5	0.5	0.5	0.6	0.8	-0.1
	1c Base Effect		0.6	-0.2	-0.1	-0.6	-1.6	-0.6	-0.7	-0.2	-0.2	-1.4	-0.7
2	CPI Food Inflation (per cent)	4.5	5.6	5.9	7.5	8.1	7.8	7.6	6.7	7.6	8.4	7.1	5.1
	2a Change in Food Inflation (2b+2c)		1.1	0.3	1.5	0.6	-0.3	-0.3	-0.9	0.9	0.8	-1.3	-2.0
	2b Momentum		-1.1	-0.1	1.3	1.4	1.5	0.9	0.1	0.7	0.9	1.0	-0.7
	2c Base Effect		2.1	0.4	0.1	-0.8	-1.7	-1.2	-0.9	0.1	-0.1	-2.3	-1.2
3	CPI Fuel Inflation (per cent)	11.0	9.3	8.7	7.5	10.7	9.5	10.1	11.8	10.8	10.4	9.9	10.6
	3a Change in Fuel Inflation (3b+3c)		-1.6	-0.6	-1.2	3.1	-1.1	0.6	1.6	-1.0	-0.4	-0.5	0.7
	3b Momentum		0.1	0.9	0.9	3.0	1.4	0.8	2.0	-0.4	0.4	0.6	0.4
	3c Base Effect		-1.6	-1.5	-2.0	-0.1	-2.4	-0.3	-0.6	-0.4	-0.7	-1.0	0.2
4	CPI ex Food Fuel Inflation (per cent)	6.1	6.0	5.8	6.4	7.1	5.9	6.0	6.0	5.9	6.0	6.0	6.0
	4a Change in ex Food Fuel Inflation (4b+4c)		-0.1	-0.1	0.5	0.7	-1.2	0.1	0.0	-0.1	0.1	0.0	0.0
	4b Momentum		0.4	0.5	0.6	1.2	0.4	0.1	0.6	0.4	0.3	0.6	0.4
	4c Base Effect		-0.5	-0.6	-0.1	-0.5	-1.5	0.0	-0.7	-0.5	-0.2	-0.6	-0.4

Note: Some numbers may not add up due to rounding.**Sources:** NSO; and authors' estimates.

inflation from its April peak. Momentum eased further in June and stabilised in the ensuing months; however, favourable base effects waned from June and virtually disappeared in September. Accordingly, headline inflation averaged 7 per cent during May-September, moving in a range of (-)30 bps to (+) 40 bps around the average. In October, favourable base effects were so strong that they nullified a positive momentum and brought about a fall in headline inflation by 60 bps to 6.8 per cent, the largest since May 2022. In November, favourable base effects, along with a decline in momentum, pushed headline CPI inflation to 5.9 per cent - below the upper tolerance band for the first time in 2022.

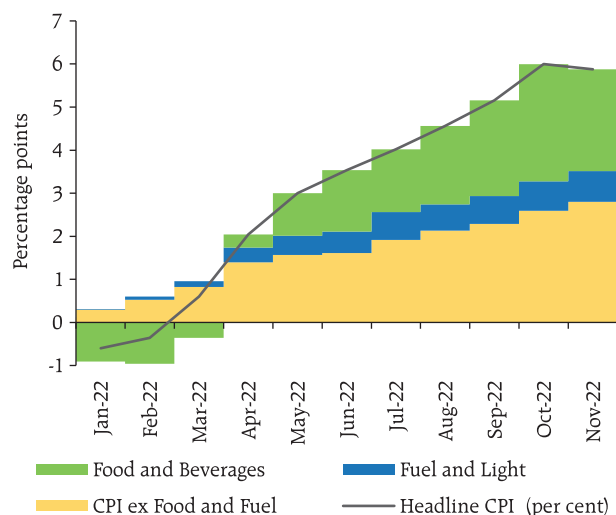
Another important characteristic of this unique inflation experience is that momentum remained persistently positive for all the three major groups, viz., food, fuel and core (excluding food and fuel) during February-October 2022. By August, food became the dominant driver of headline price movements. In contrast, the momentum of fuel price changes ebbed and base effects remained favourable. The momentum of core price changes remained positive

and volatile, overwhelming generally favourable base effects. In October, the core component registered a sharp pick-up in momentum, the largest since April 2022. These shifts are unusual in the history of inflation in India. In November, for the first time since January 2022, headline inflation fell below 6 per cent due to a sharp drop in vegetables prices, even as momentum in the fuel and core categories remained positive.

Next, we look at the build-up of price pressures over successive months of the period under study in order to ascertain whether the evolving price momentum is persistent or transitory and what are the contributory factors. Although the accumulation of price pressures has been sustained across all the major groups, the pressure points turned out to be food and core. In fact, CPI core, where prices tend to be sticky, contributed substantially to the price build-up since March (Chart 2).

The initial contributors to the food price build-up were cereals, edible oils, meat and fish. By May, milk and products joined these drivers, along with spices and prepared meals. Upside pressures were

Chart 2: CPI - Cumulative Price Build Up (over November 2021)



Sources: NSO; and authors' estimates.

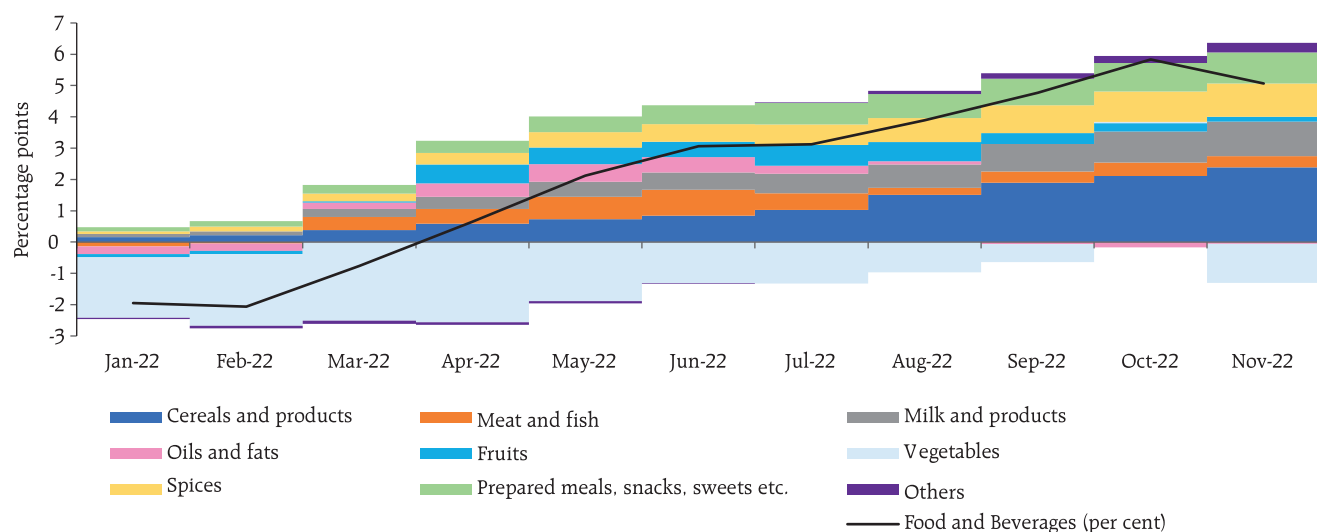
amplified by the waning of the effect of the usual seasonal moderation in vegetables prices. By August, there was a shift in drivers. Global edible oil prices registered a plunge, but the sustained price build-up in cereals, vegetables, milk and spices offset it. In

November, a sharp drop in vegetables prices pulled the cumulative food price momentum downwards, even though almost all other major sub-groups registered further price increases.

The loss of supply of sunflower oil from the Black Sea region triggered the initial increase in domestic edible oil prices. For other edible oils including palm oil, price pressures stemmed from export bans by principal producers in April-May⁵ (Chart 4). Cereals price pressures intensified with disruptions of wheat supplies from the Black sea region, which account for close to a third of global supplies. In India, its spillovers were felt through the channel of wheat exports.

Protein prices picked up on the back of increases in feed cost prices, primarily due to harvest failures in Latin America but also accentuated by the loss of output due to the Ukraine conflict. Prepared meals prices also rose on account of increases in prices of key inputs like edible oils and transport costs.

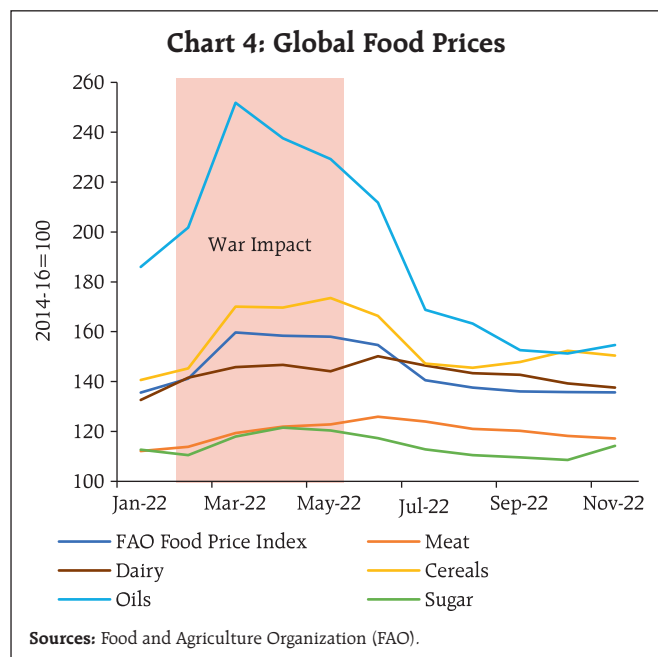
Chart 3: CPI Food and Beverages - Cumulative Price Build Up (over November 2021)



Note: 'Others' include 'eggs', 'pulses and products', 'sugar and confectionary' and 'non-alcoholic beverages'.

Sources: NSO; and authors' estimates.

⁵ Indonesia, which accounts for around 60 per cent of global palm oil supplies, imposed a ban on exports during April 28, 2022 to May 22, 2022.



While a substantial part of inflation's ascent in India was driven by external factors, supply disruptions in agriculture brought about by adverse weather conditions also contributed to the build-up of price pressures over successive months. First, the

unprecedented heat wave conditions in March-May affected the production of wheat and vegetables. Second, even as the monsoon during the south-west season turned out to be normal at the all-India level, its spatial distribution was uneven. Rain-fed paddy grown in the Gangetic plains of Uttar Pradesh, West Bengal, Odisha and Bihar got affected adversely (Chart 5a).

Third, the beginning of the paddy harvesting season saw intermittently intense rain spells, including in the retreating phase of the southwest monsoon in September-October (Chart 5b). This also drove spikes in prices of key vegetables like tomatoes. While the build-up in price pressures for cereals has been secular, vegetables prices have exhibited considerable volatility, which also got reflected in contributions to inflation (Chart 6a and b).

In the case of fuel, the price build-up occurred predominantly through a sharp rise in kerosene prices along with a pick-up in LPG prices. From August,

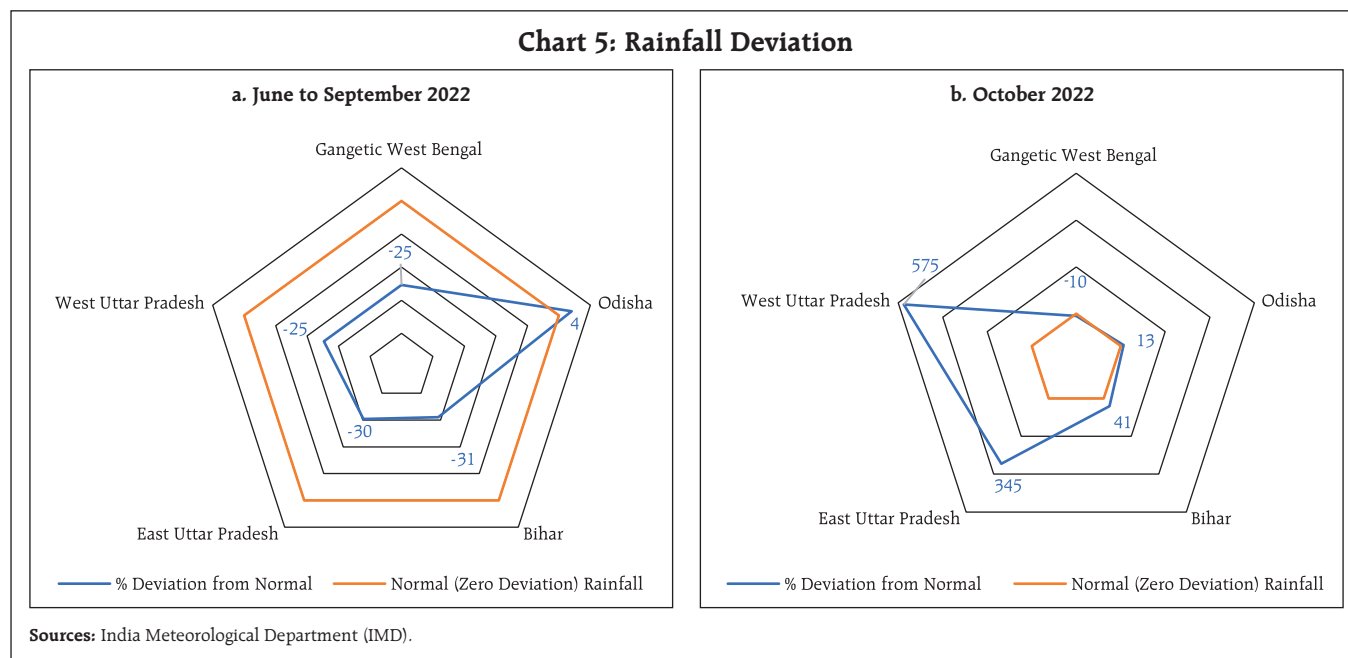
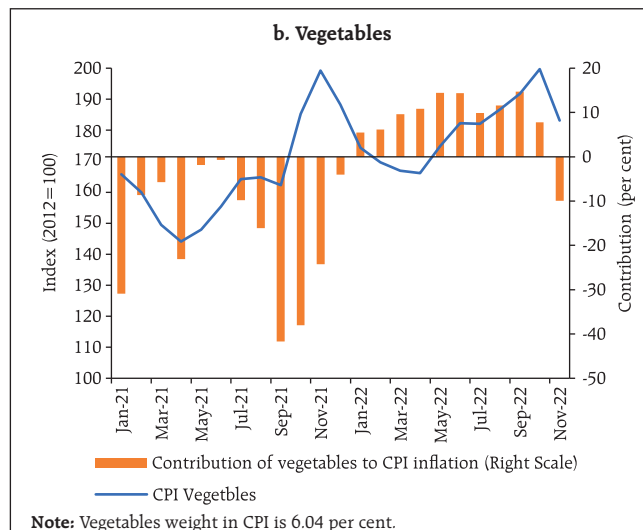
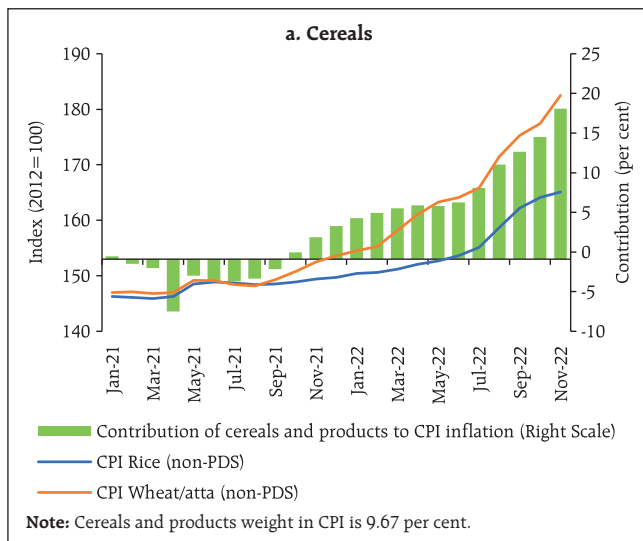
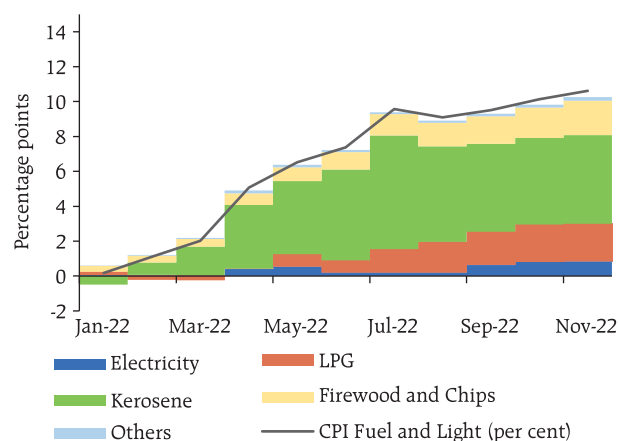


Chart 6: Price Movements and Contribution to Inflation

Sources: NSO; and authors' estimates.

kerosene prices started to edge down in response to falling international prices (Chart 7).

The price build-up in the core category has been persistent across sub-constituents. In the initial months, the largest contributors were clothing, transportation and communication, and personal care

Chart 7: CPI Fuel and Light - Cumulative Price Build Up (over November 2021)

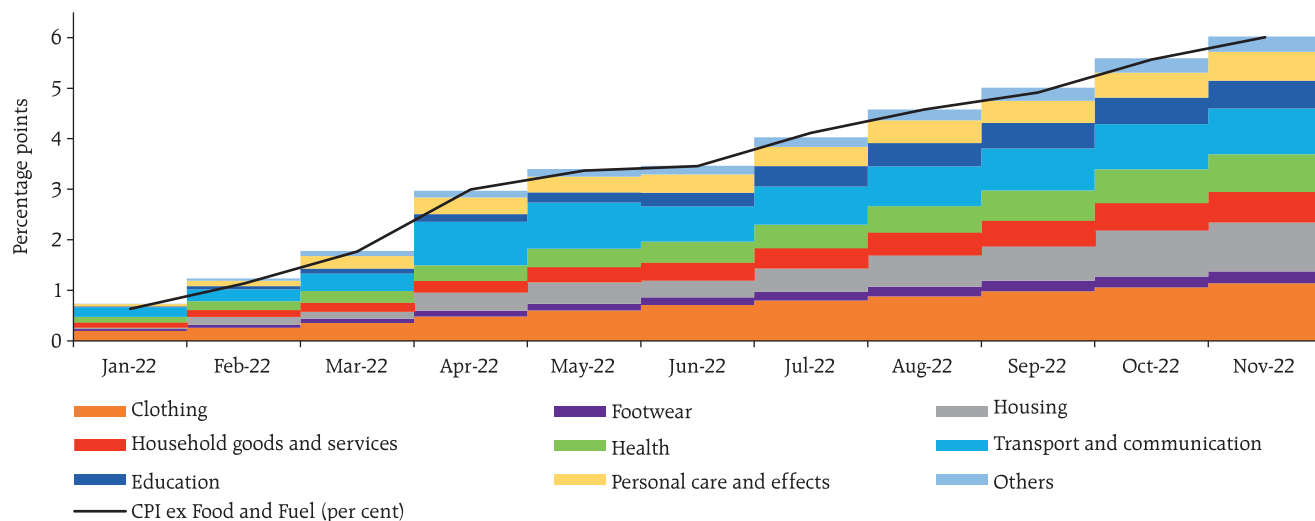
Note: 'Others' include diesel (excluding conveyance), other fuel, coke, firewood and chips, coal, charcoal and dung cake. Statistical discrepancies are distributed over the individual contributions.

Sources: NSO; and authors' estimates.

and effects (Chart 8). Under transportation, the main driver was the increase in pump prices during March-April following the spike in crude oil prices since the start of the conflict. Between March 22 and April 6, 2022, petrol and diesel retail selling prices were increased by around ₹10 per litre in 14 revisions. By June, the impact of transportation waned as pump prices fell on a reduction in excise duties.⁶ Nevertheless, the second-round impact on transportation costs and fares sustained the price momentum in this category. Progressively, price pressures started to get broad-based covering clothing, household goods and services, personal care and effects, health, education and housing, *i.e.*, 73 per cent of core CPI.

Thereafter, cost-push pressures faced by firms turned out to be the key driver of inflation and its stickiness. The war in Ukraine fueled a spike in global industrial input prices (including energy costs) over and above the cost pressures from disruptions in supply chains, and the surge in international commodity prices post lockdown (Chart 9 and Table 4).

⁶ The excise duty on petrol was reduced by ₹8 per litre and on diesel by ₹6 per litre, with effect from May 22, 2022.

Chart 8: CPI Excluding Food and Fuel - Cumulative Price Build-up (over November 2021)

Note: 'Others' include 'pan, tobacco and intoxicants' and 'recreation and amusement'.
Sources: NSO and authors' estimates.

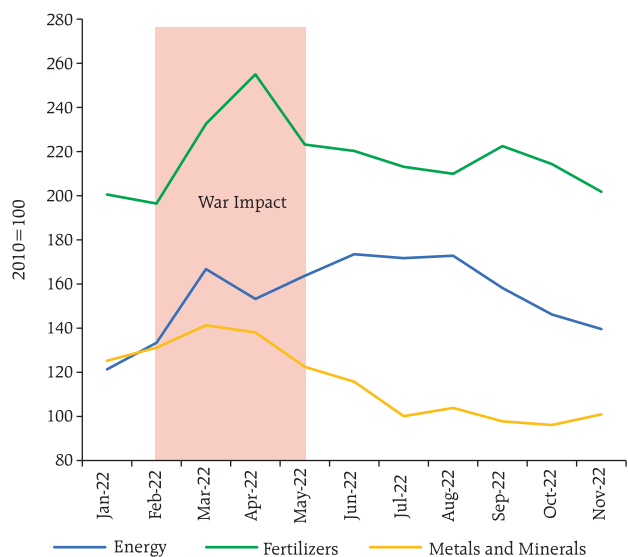
As firms started to pass cost pressures on to consumers, especially in respect of manufactured goods, it led to a pick-up in prices of fast moving consumer goods (FMCGs) and other consumer durables.

Since early 2022, therefore, goods have been driving the inflation process. Services inflation lagged behind, especially on account of low house rent inflation and low pricing power of services sector firms (Table 5)⁷. As an explosive rebound in demand for services took hold subsequently, pricing power improved and translated into faster pass-through of high costs to services and the generalisation of inflation.

As a result, most of the CPI sub-groups recorded inflation rates above 6 per cent during this period (Table 6).

In fact, the cumulative weight of CPI items which recorded inflation in excess of 6 per cent went up successively barring a transitory moderation during May-July 2022 (Chart 10).

A quiver plot of inflation captures the speed and direction of inflation pick-up/disinflation over time

Chart 9: Global Industrial Input Prices

Source: World Bank.

⁷ For further details see RBI (2022).

Table 4: Input Costs

WPI	Weight	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
y-o-y (per cent)												
WPI Industrial Raw Materials	17.5	25.9	25.2	25.7	27.9	34.6	32.7	28.2	22.7	19.6	16.4	12.5
WPI Farm Inputs	9.5	24.6	22.6	22.7	26.9	38.2	41.7	39.7	33.5	32.0	25.6	22.4
m-o-m (per cent)												
WPI Industrial Raw Materials	17.5	1.9	2.1	2.7	2.1	5.4	0.3	-1.2	-1.7	-1.3	-1.3	2.0
WPI Farm Inputs	9.5	1.9	1.0	0.9	3.0	9.1	2.8	0.9	-2.3	1.0	-1.2	3.5

Sources: Office of the Economic Advisor (OEA), Government of India; and authors' estimates.

in the slope and direction of the inflation vector line.⁸ In the quiver plots of inflation movements, current month's inflation is plotted on the y-axis and the previous month's inflation is shown on the x-axis. The graph area of the quiver plot is divided into four quadrants segregated by whether or not the current/previous period inflation is in excess of 6 per cent. If inflationary pressures are transitory, inflation vector lines move rapidly from one quadrant to another. On the other hand, inflation persistence is indicated when the inflation vector lines remain largely in one quadrant over time. The movement

of the inflation vector line into quadrant 1 (top left) indicates a build-up in inflationary pressures over the previous month (current inflation is higher than 6 per cent), while a movement into quadrant 2 (top right) denotes high inflation persistence (inflation more than 6 per cent in current and previous months). A movement into quadrant 3 (bottom right) denotes a progressive softening of inflation (current inflation lower than 6 per cent). Readings in quadrant 4 (bottom left) indicate lowering inflation pressures (inflation in current and previous months being lower than 6 per cent).

Table 5: Goods and Services Inflation

(y-o-y, per cent)

	Weight	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Goods	76.6	6.6	6.8	7.8	8.9	8.0	7.9	7.4	7.8	8.3	7.3	6.2
Core (CPI ex Food Fuel) Goods	24.3	7.2	7.2	7.9	8.9	7.2	6.6	6.3	6.4	6.6	6.2	6.5
Services	23.4	4.3	3.7	4.3	4.2	3.8	4.2	4.4	4.3	4.7	5.1	4.9
Education	3.5	3.1	3.5	3.4	4.1	3.8	4.9	5.3	5.8	6.0	6.0	6.0
Housing	10.1	3.6	3.6	3.4	3.5	3.5	3.9	3.9	4.1	4.6	4.6	4.6
Transport	2.5	5.5	5.3	5.8	6.8	6.6	7.4	7.4	7.0	7.4	8.1	7.2
Medical	1.8	5.6	5.5	5.8	6.1	4.9	4.8	5.0	5.0	5.1	5.1	5.2
Other Services	5.5	5.3	2.5	5.3	3.8	2.7	2.7	3.0	2.3	2.6	3.8	3.7

Note: 'Other Services' include grinding charges, household services, mobile and internet charges, recreation services and personal care services.

Sources: NSO; and authors' estimates.

⁸ A vector line has information on both magnitude and direction. They are usually drawn as pointed arrows, the length of which represents the magnitude and the arrow represents the direction.

Table 6: CPI Inflation

(y-o-y, per cent)

	Weight	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
(a) Cereals and products	9.7	3.5	4.0	5.0	6.0	5.3	5.7	6.9	9.6	11.5	12.1	13.0
(b) Meat and fish	3.6	5.5	7.4	9.6	7.0	8.2	8.6	3.0	1.0	2.5	3.1	3.9
(c) Egg	0.4	2.2	4.1	2.4	-0.1	-4.6	-5.5	-3.8	-4.6	-1.8	-0.2	4.9
(d) Milk and products	6.6	4.1	3.9	4.7	5.5	5.6	6.1	5.8	6.4	7.1	7.7	8.2
(e) Oils and fats	3.6	18.7	16.4	18.7	17.3	13.3	9.4	7.5	4.6	0.4	-2.2	-0.6
(f) Fruits	2.9	2.3	2.3	2.5	5.0	2.3	3.1	6.3	7.4	5.7	5.2	2.6
(g) Vegetables	6.0	5.1	6.1	11.6	15.3	18.3	17.3	10.9	13.3	18.2	7.8	-8.1
(h) Pulses and products	2.4	3.0	3.0	2.6	1.9	-0.4	-1.0	0.2	2.6	3.0	2.8	3.1
(i) Sugar and Confectionery	1.4	5.4	5.4	5.5	5.2	4.3	4.2	4.8	4.5	1.6	0.0	-0.2
(j) Spices	2.5	4.7	6.2	8.5	10.6	9.9	11.0	12.9	14.9	16.9	18.1	19.5
(k) Non-alcoholic beverages	1.3	6.7	5.8	5.6	5.5	4.9	4.9	4.7	4.3	4.1	4.1	4.1
(l) Prepared meals, snacks, sweets etc.	5.6	6.4	6.3	6.6	7.1	7.1	6.7	7.5	7.8	7.8	7.8	7.9
I Food and beverages	45.9	5.6	5.9	7.5	8.1	7.8	7.6	6.7	7.6	8.4	7.1	5.1
II Pan, tobacco and intoxicants	2.4	2.5	2.4	3.0	2.7	1.1	1.8	1.8	1.7	2.0	1.9	2.0
(a) Clothing	5.6	8.7	8.6	9.1	9.5	8.5	9.2	9.5	9.6	9.9	9.8	9.5
(b) Footwear	1.0	9.5	10.1	11.3	12.1	10.7	11.9	11.9	11.9	12.2	12.2	12.0
III Clothing and footwear	6.5	8.8	8.9	9.4	9.9	8.9	9.5	9.9	9.9	10.2	10.2	9.8
IV Housing	10.1	3.5	3.6	3.4	3.5	3.7	3.9	3.9	4.1	4.6	4.6	4.6
V Fuel and light	6.8	9.3	8.7	7.5	10.7	9.5	10.1	11.8	10.8	10.4	9.9	10.6
(a) Household goods and services	3.8	7.1	7.2	7.7	8.0	6.8	7.5	7.4	7.5	7.6	7.6	7.7
(b) Health	5.9	6.9	6.8	7.0	7.2	5.4	5.5	5.4	5.4	5.6	5.7	5.8
(c) Transport and communication	8.6	9.3	8.1	8.0	10.9	9.5	6.9	5.6	5.2	5.4	4.6	5.3
(d) Recreation and amusement	1.7	7.0	6.9	7.0	7.3	6.0	7.0	7.1	6.9	6.3	6.1	5.4
(e) Education	4.5	3.3	3.6	3.6	4.1	4.2	4.5	5.0	5.5	5.7	5.8	5.8
(f) Personal care and effects	3.9	3.5	5.5	8.7	8.6	6.2	6.7	6.0	7.0	6.8	7.0	7.0
VI Miscellaneous	28.3	6.5	6.6	7.0	8.0	6.8	6.3	5.9	6.0	6.1	5.9	6.1
General Index (All Groups)	100.0	6.0	6.1	7.0	7.8	7.0	7.0	6.7	7.0	7.4	6.8	5.9
<i>Memo</i>												
CPI excluding Food and Fuel	47.3	6.0	5.8	6.4	7.1	5.9	6.0	6.0	5.9	6.0	6.0	6.0
CPI excluding Food, Fuel, Petrol and Diesel	45.0	5.6	5.6	6.2	6.5	5.5	6.1	6.3	6.2	6.3	6.5	6.3
CPI excluding Food, Fuel, Petrol, Diesel, Gold and Silver	43.8	5.8	5.7	6.1	6.4	5.5	6.1	6.4	6.2	6.4	6.5	6.4

< =2%

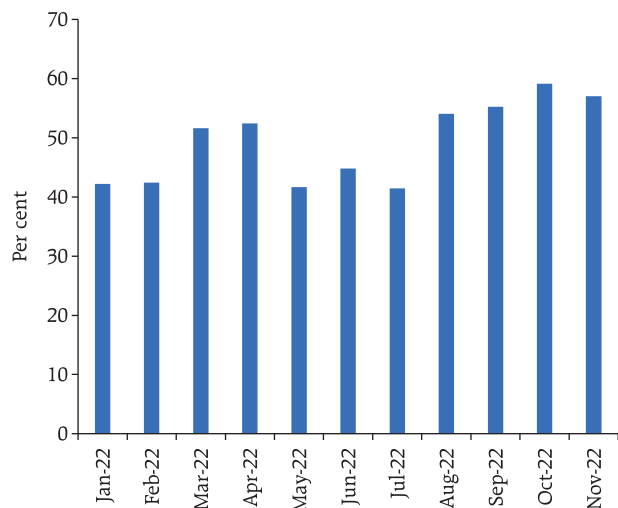
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> =6%

Sources: NSO; and authors' estimates.

The quiver plots show that for headline inflation as well as its constituents, vector lines mostly stayed in quadrant 2 during February to October 2022,

indicating high inflation persistence. In November 2022, the inflation vector line entered quadrant 3, mainly on account of a sharp decline in food inflation

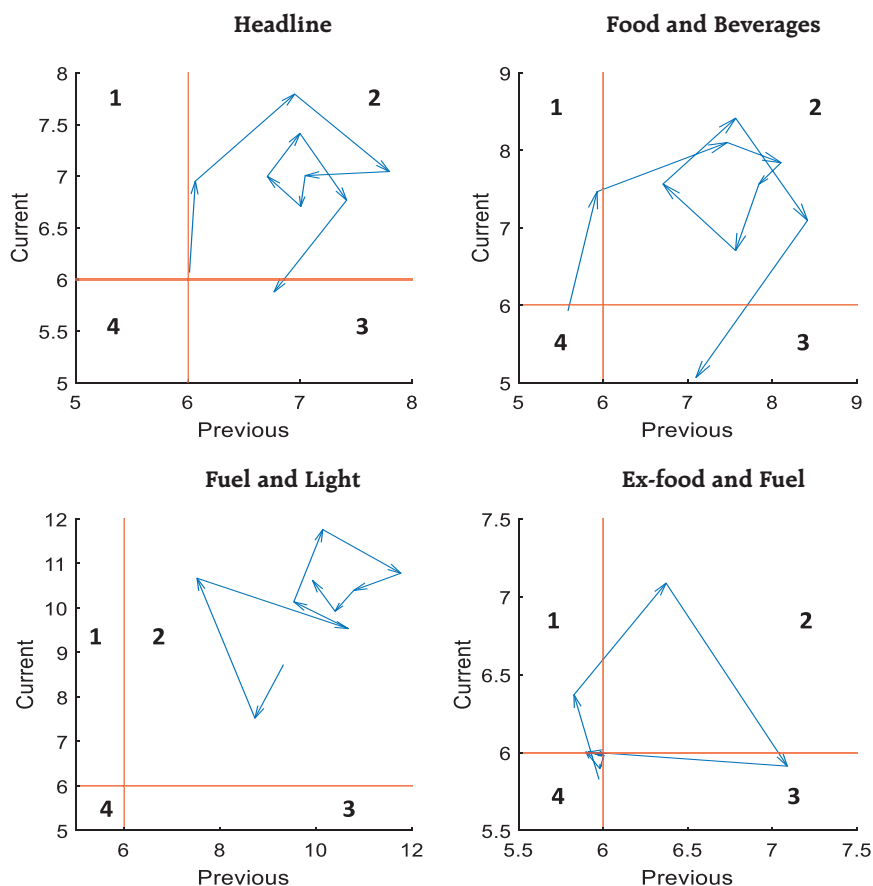
Chart 10: Cumulative Weight of Items with more than 6 per cent Inflation

Sources: NSO; and authors' estimates.

(Chart 11). Within food, vegetables inflation entered deep into quadrant 3 by November. For cereals, milk, spice and prepared meals, the vector lines moved into quadrant 2 over successive months (Annex A1). Continuing price pressures in sub-groups such as clothing, household goods and services, personal care and effects, education and housing imparted persistence to core inflation (Annex A2).

III. Statistical Properties of the Recent Inflation Experience

What do the laws of motion say about this unprecedented inflation surge? The moments of inflation's distribution are its mean or the first moment; standard deviation (SD) or the dispersion of the inflation rates around the mean, *i.e.*, the second

Chart 11: CPI Inflation (y-o-y) Quiver Plot (February to November 2022)

Sources: NSO; and authors' estimates.

Table 7: Moments of CPI Inflation

Category	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
CPI Headline Inflation (y-o-y)	6.0	6.1	7.0	7.8	7.0	7.0	6.7	7.0	7.4	6.8	5.9
Standard Deviation	3.3	2.8	3.4	3.7	4.0	3.7	2.9	3.3	4.3	3.7	5.3
Skewness	1.9	1.6	1.4	0.7	1.0	0.9	0.1	0.3	0.9	0.3	-0.5
Kurtosis	7.7	6.9	6.1	3.1	4.8	5.3	3.3	3.1	3.7	4.2	4.6

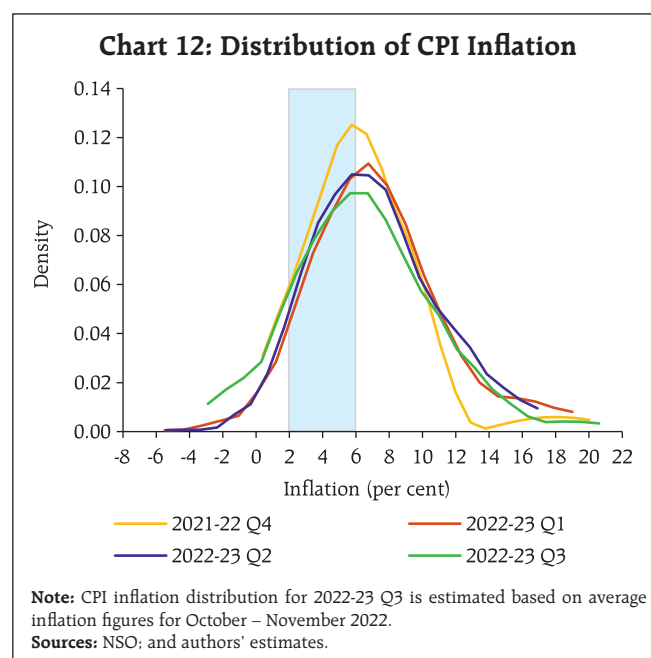
Sources: NSO; and authors' estimates.

moment; skewness or the third moment, which measures the distance of the tails from the mean and looks at the impact of outlying high inflation rates influencing the mean; and kurtosis or the fourth moment, which indicates the extent to which the distribution has fat or thin tails relative to a normal distribution, or the role of extreme inflation events in sub-groups in explaining headline inflation variance (the second moment).

These moments together point to a change in the inflation process since the onset of the war in Ukraine. High inflation before the war coexisted with a high positive skew, signaling the disproportionate role of outlying inflation rates on headline inflation. With the onset of the war, the distribution of inflation was characterised by high mean rates, sequentially lower positive skew and relatively lower kurtosis, indicating that a sizeable number of sub-groups experienced high inflation rates and influenced the headline inflation rate. In November, the inflation distribution exhibited negative skew, high standard deviation, increase in kurtosis and lower mean inflation rate (Table 7 and Chart 12). This indicates that although the direct effects of the shocks on headline inflation have started to wane, the second round effects induced by them are imparting persistence to headline inflation.

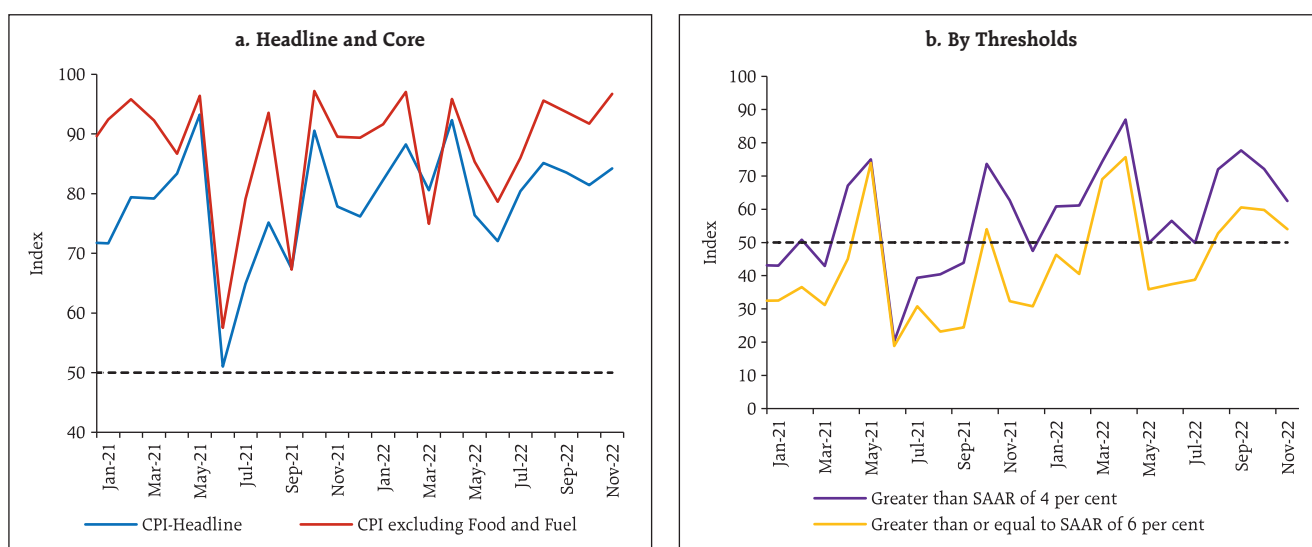
A formal examination of generalisation of price pressures in CPI is attempted through diffusion measures. Diffusion indices measure the extent to which prices of items in the CPI basket increased

in a cross sectional manner over time, adjusted for seasonal effects.⁹ CPI diffusion indices point to unrelenting price increases in a majority of items in the CPI basket during January-June 2022. The moderation in diffusion indices in July could not be sustained as price increases resumed across the CPI basket from August. Even with a softer headline inflation in November, diffusion indices edged up, indicating broadening of price increases (Chart 13a).



⁹ 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. The higher the reading is above 50 for the diffusion index, the broader is the expansion or generalisation of price increases; the further is the reading below 50, the broader is the price decline across items. The CPI prices are controlled for seasonal movements using X13. For further details see Patra *et al.* (2014).

Chart 13: CPI Diffusion Indices



Sources: NSO; and authors' estimates.

The most striking aspect is the near universal increase in prices across categories at rates exceeding 4 per cent and 6 per cent. The spike in inflation to 7.8 per cent in April coincided with a large majority of core items registering price increases in excess of the seasonal adjusted annualised rate (SAAR) of 6 per cent. In November 2022, there was a pull-back in the disproportionately large number of items that registered price increases in excess of 4 per cent and 6 per cent (Chart 13b).

A measure of relative price variability is used to identify whether inflation stems from concentrated price pressures in a few commodities, or it is a more generalised phenomenon. Following the tradition, our measure of relative price variability (RPV) is defined as:

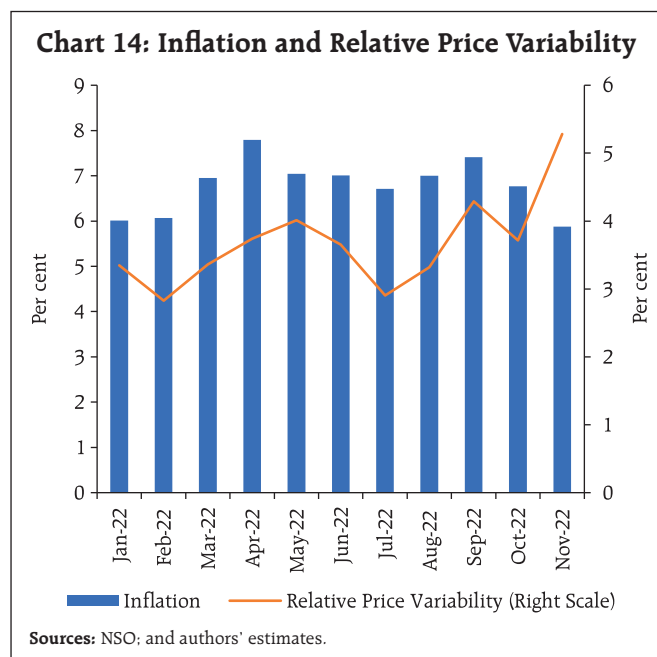
$$RPV_t = \sum_{i=1}^N w_i (\pi_{it} - \pi_t)^2 \quad \dots(1)$$

where RPV_t is relative price variability at period t , π_{it} is inflation in item i at time period t , w_i is the weight of item i in the CPI basket and π_t is the aggregate inflation (Fischer, *et al.*, 1981). An increase in overall inflation

accompanied by an increase in RPV is indicative of a supply shock as the relative prices of a few items would have gone up in such a scenario. If following the inflation spike, however, inflation remains high along with a fall in relative prices, it indicates that there is generalisation of inflation.

The initial spike in inflation was driven by supply shocks, but it got generalized thereafter as evident from the fall in RPV in recent months. In November, a rise in RPV along with a fall in inflation reflected the outsized impact of a few components (Chart 14).

Cyclically sensitive inflation (CySI) measurement is intended to identify that part of CPI impacted by movements in economic cycles (Stock and Watson, 2020). This approach is designed to maximize the correlation between CySI and a measure of aggregate cyclical variation such as the output gap (Patra *et al.*, 2021). CySI is a weighted average of the 23 sub-groups in CPI. A measure of acyclical inflation (aCySI) can be obtained by calculating the residual of headline inflation from the CySI. The estimation of CySI is as



follows:

The correlation of each of the 23 sub-group indices with the output gap measure is determined by estimating a Philips Curve (PC) like equation:

$$\pi_t^i = c + \rho^i * \underbrace{\pi_{t-1}^i}_{\text{Backward looking term}} + \alpha^i * \underbrace{OG_t}_{\text{Output gap}} + \varepsilon_t^{\pi^i}$$

and $\varepsilon_t^{\pi^i} \sim N(0, \sigma_t^{\pi^i})$ (2)

where π_t^i is the seasonally adjusted quarter-on-quarter annualised rate of the i^{th} CPI sub-group. Errors ($\varepsilon_t^{\pi^i}$) follow a normal distribution with stochastic volatility to control for time-varying supply-side effects. ρ^i and α^i are the parameters of our interest. α^i represents the short-term elasticity of the output gap with respect to the i^{th} sub-group level inflation, while $\frac{\alpha^i}{(1-\rho^i)}$ is the long-run elasticity.

The parameters and time-varying volatility are estimated by using the Bayesian Markov Chain Monte Carlo (MCMC) method on quarterly data from Q1:2011 to Q1:2022. The convergence diagnostics are found to be satisfactory.

We use $\frac{\alpha^i}{(1-\rho^i)}$ estimated in (2) to readjust the CPI weight of the sub-group (w^i). If $\frac{\alpha^i}{(1-\rho^i)}$ is negative, a zero weight is assigned to that group. Thus, the readjusted weight (W^i) of each sub-group is

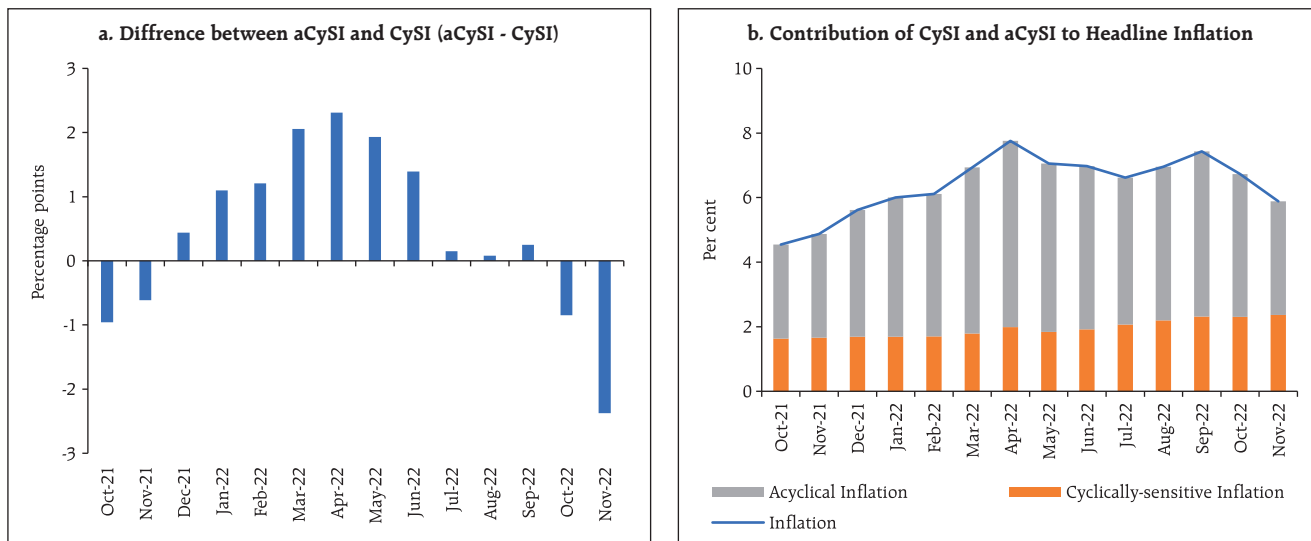
$$W^i = \frac{\alpha^i}{(1-\rho^i)} * w^i, \quad \text{if } \alpha^i > 0$$

$$= 0, \text{ Otherwise} \quad \dots (3)$$

W^i is normalized to 100 to get the weights of the sub-groups in the CySI.

Education, housing, prepared meals, fuel and light, cereals, milk, household goods and clothing have notable weights in CySI. These goods and services have prices that are mostly determined in domestic markets and are less affected by weather changes at least over the past decade. On the other hand, sub-groups like transport and communication, oils and fats, and personal care and effects imbibe a large international influence. They get zero or negligible weights in the CySI. Most of the other food groups like vegetables and fruits, which are affected by supply and influenced by climatic changes, also enter CySI with negligible weights.

During the pandemic period (since Q1 of 2020 up to Q2 2021), CySI has remained persistently lower than aCySI, indicating that the supply disruptions were determining headline inflation, not demand factors. The aCySI-CySI gap closed in the second half of 2021, but widened after February 2022 (Chart 15a). Supply shocks driving the acyclical component of inflation were the principal contributors to the ascent of inflation (Chart 15b). On a note of caution, the contribution of CySI to headline inflation seem to be rising in recent months, narrowing the gap between aCySI and CySI till it turned negative since October 2022. The generalisation of inflationary pressures that is being flashed indicates the increasing role of demand pull, warranting monetary policy action to combat second-round effects.

Chart 15: Cyclically-sensitive and Acyclical Inflation

Sources: NSO; and authors' estimates.

IV. Bringing It All Together

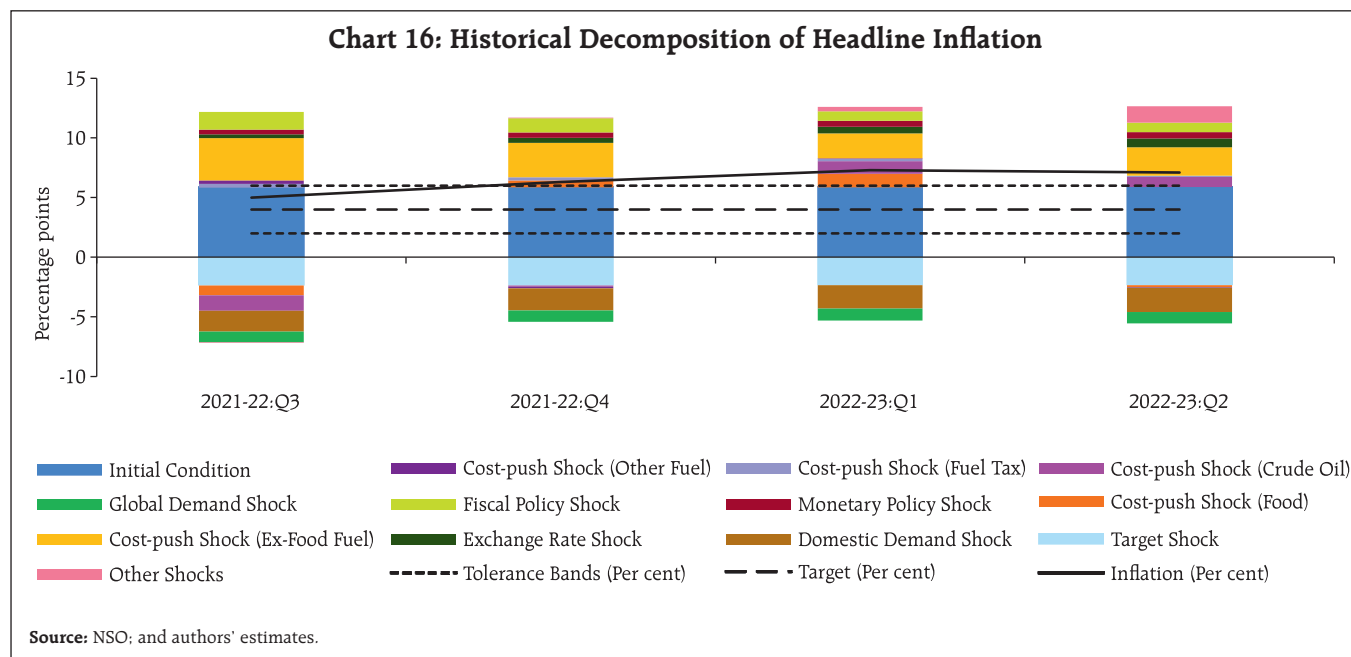
The examination of the latent drivers of inflation's ascent point to the conclusion that inflation surging above the upper tolerance band of the target was kick-started by a series of supply shocks, induced first by COVID-19 and then followed up by the war in Ukraine and weather-related uncertainties. How some of these shocks led to generalisation and persistence in inflation thereafter deserves focus. All those are assimilated into a macro model to identify the inter-temporal determinants of inflation, using the Reserve Bank of India's (RBI's) Quarterly Projection Model (QPM). The QPM belongs to the *genre* of consensus macroeconomic New Keynesian open economy structural models (Benes *et al.*, 2016 & RBI, 2021). Drawing on this tradition, it consists of 1) an aggregate demand equation; 2) an expectations augmented Philips curve; 3) a monetary policy rule; and 4) an external block for the determination of exchange rates.

A defining feature is the focus on nominal rigidities in price/wage settings and in mark-ups, providing monetary policy the exploitable trade-

off to affect goal variables like output and inflation. Trend variables like potential output are assumed to be supply-driven and are, therefore, exogenous to the model. Inflation is a result of deviations of aggregate demand from its underlying trend.

In India, the prominence of food and fuel in the consumption basket amplifies the dominance of supply-side shocks and spillovers to the formation of overall inflation. Therefore, such country-specific characteristics are incorporated into the QPM, enabling gains in empirical regularity. It embeds many India-specific features like the behaviour of different inflation components and their interlinkages, sluggishness in monetary policy transmission, the predominance of the bank lending channel, central bank credibility, monetary-fiscal linkages, fuel pricing, capital flow management and exchange rate dynamics. The historical decomposition (HD) of headline inflation in the QPM helps to understand the key macro contributors to inflation's ascent during the period of study (Chart 16).

In Q4 of 2021-22, inflation averaged 6.3 per cent. COVID-19 induced supply disruptions and their



impact on core inflation accounted for more than half of the rise in inflation above the target. Food price shocks contributed around 22 per cent and exchange rate pass-through contributed 16 per cent.

The war in Ukraine and the weather-related disturbances accentuated supply side shocks in Q1 of 2022-23, pushing inflation up to 7.3 per cent. Fuel price (including petrol and diesel) shocks contributed 39 per cent to the deviation of headline inflation from the target. The shocks emanating from weather-related events and the Ukraine war led to food price shocks, which contributed 33 per cent. Exchange rate pass-through continued to contribute 16 per cent.

In Q2 of 2022-23, inflation declined, but averaged 7 per cent. Food shocks tapered off primarily due to supply interventions such as reduction in import duties for edible oils; restriction on exports, especially wheat; and other supply side measures covering key vegetables and pulses. Fuel price shocks continued to contribute 33 per cent of inflation's deviation from its target. With synchronised monetary policy tightening

across the world, the contribution of exchange rate passthrough increased to 29 per cent. The second-round effects of commodity prices on core inflation contributed almost a third of inflation's deviation from its target.

Conclusion

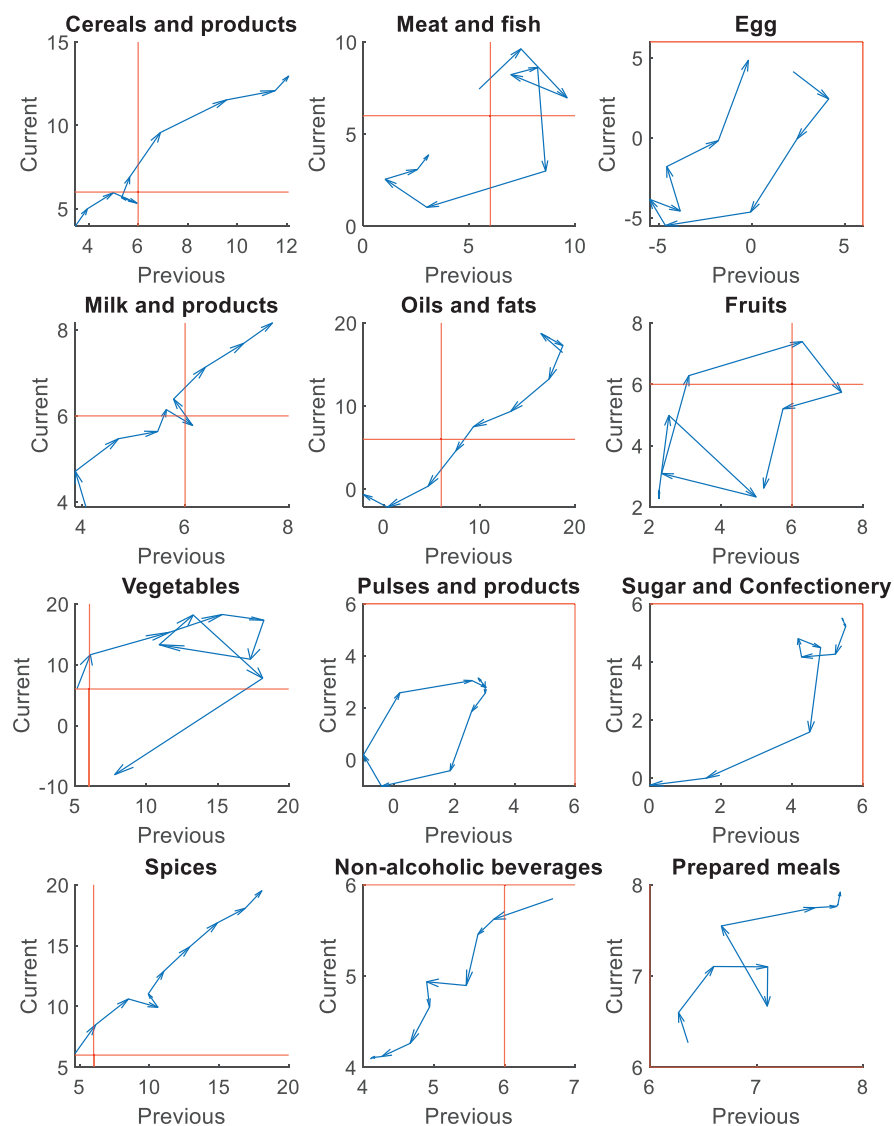
The foregoing analysis highlights the predominant role of supply-side shocks in pushing up headline inflation above the upper tolerance band. What started as a shock to food and fuel prices got increasingly generalised over ensuing months. This was reflected in highly elevated and sticky core inflation. Unprecedented input cost pressures got translated to output prices, particularly goods prices, in spite of muted demand conditions and pricing power. As the direct effects of the conflict waned and international commodity prices softened, the strengthening domestic recovery and rising demand enabled pass-through of pent-up input costs, especially in services, adding persistence to elevated inflationary pressures.

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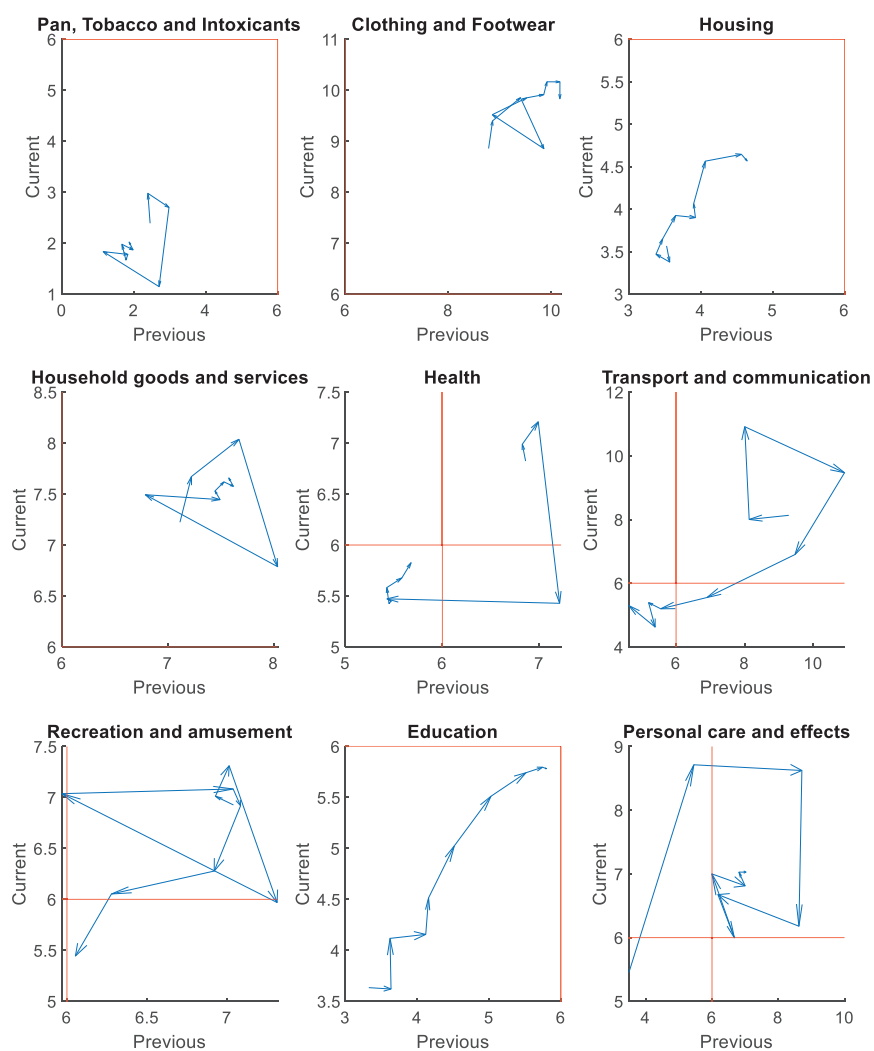
Annex

**Chart A1 : CPI Food and Beverages Sub-groups' Inflation (y-o-y): Quiver Plots
(February to November-2022)**



Sources: NSO; and authors' estimates.

**Chart A2 : CPI excluding Food and Fuel Group/Sub-groups' Inflation (y-o-y): Quiver Plots
(February to November-2022)**



Sources: NSO; and authors' estimates.

Assessing Inflation Expectations Adjusting for Households' Biases

by Silu Muduli[^], G V Nadhanael[^], and
Sitikantha Pattanaik[^]

Post-COVID, supply shock-induced spike in inflation in India has spawned renewed research interest in assessing the extent to which inflation expectations are anchored to the inflation target, given its importance to securing price stability in the medium-run. This article constructs a bias-adjusted household inflation expectations series to show that such a measure contains useful forward-looking information for predicting headline inflation. It also presents an inflation expectation anchoring (IEA) index to highlight the significance of the flexible inflation targeting (FIT) framework to firmer anchoring of expectations and the role of repeated supply shocks in posing the risk of de-anchoring expectations.

Introduction

Inflation expectations broadly indicate what different economic agents – consumers, businesses, and investors – assess today about inflation in the future. Since the actual evolution of the inflation trajectory in a country can be conditioned by inflation expectations, central banks assign focused attention to anchor inflation expectations. When inflation expectations are anchored, short-term supply disruptions or supply shocks would not alter expectations about inflation in the medium-run, despite inflation rising/declining in the short-term, thereby minimising the risk of a wage-price spiral. Past conduct of monetary policy, in terms of delivering price stability in the medium-run, no matter the nature and size of shocks to inflation

has an important bearing on the degree to which a central bank could anchor inflation expectations. In a flexible inflation targeting (FIT) framework, due to the primacy assigned to price stability in the monetary policy mandate, with an explicit inflation target as the nominal anchor, and clear accountability norms for monetary policy actions and transparency about the policy-making processes, the scope for anchoring inflation expectations is higher (Bernanke, 2007; Ha et al., 2019). If inflation expectations are anchored, then monetary policy "...can respond more aggressively to recessionary demand shocks and less aggressively to inflationary supply shocks, leading to better dual mandate outcomes" (Bernanke, 2022). As expectations are so critical to the price stability mandate, central banks can enhance the effectiveness of monetary policy by "working to shape those expectations" (Bernanke, 2013).

Since expectations are unobservable, they are generally approximated through targeted surveys of households, firms and professional forecasters, besides estimating them from financial market variables such as inflation-indexed bonds, inflation swaps and inflation options. Subjective survey-based inflation expectations of households and firms help in understanding the wage-price setting behaviour, and hence in forecasting inflation, which serves as the intermediate target of monetary policy under FIT. Full information rational expectations (FIRE) models that often underpin simple models to explain inflation dynamics in a country tend to assume that all agents possess similar information, process information efficiently and therefore have identical expectations. The median/mean of survey data is commonly used as a proxy of the representative agent in the economy. In real life, however, understanding biases in subjective expectations and disagreements among agents, and the factors driving them, can help in enhancing the utility of inflation expectations data to inflation and monetary policy analysis. Survey data

[^] The authors are from the Department of Economic and Policy Research (DEPR), Reserve Bank of India. They are grateful to Binod B. Bhoi, Vimal Kishore, Himani Shekhar and Satadru Das for valuable comments. Views expressed in the article are that of the authors and not of the Reserve Bank.

adjusted for households' biases may completely alter one's assessment of the degree of effectiveness of monetary policy in anchoring inflation expectations.

Individual household perception about current/recent inflation may differ from the official release of headline CPI inflation (widely reported in the press), because the household may not know about the true inflation number, or even when the true information is known, the perception may be influenced by his/her own consumption basket and experience. When inflation perception itself differs from the official inflation number, that would imply that the full information representative agent assumption may no more be relevant for any meaningful policy analysis. Inflation perceptions often may exhibit a stronger association with inflation expectations, relative to headline inflation. Moreover, inflation expectations of heterogeneous agents may be influenced by several socio-economic factors – income levels, age, gender, purchasing attitudes, and personal optimism/pessimism about future employment and income outlook. More frequently purchased items tend to have a higher influence on both inflation perceptions and inflation expectations (Ehrmann *et al.*, 2017). The order of disagreement among economic agents on expected inflation and its dispersion could depend on the level of actual inflation, its volatility and relative price variability (Mankiw *et al.*, 2003) and the credibility of the central bank (Ballantyne *et al.*, 2016). While lower order of disagreement would imply better anchoring of expectations, more dispersed expectations would mean large forecast errors for many economic agents, which in turn could increase the cost of inflation uncertainty for them.

Since early 2020, successive and overwhelming supply-side shocks – disruptions in supply chains after the pandemic and large food and fuel price pressures after the war in Europe – and the resultant surge in global inflation have reignited the debate on the role

of monetary policy in taming supply-shock induced inflation, as there is considerable cynicism about the impact of front-loaded monetary policy actions in anchoring inflation expectations, or avoiding the risk of de-anchoring of long-term inflation expectations if high inflation persists for an extended period. In this context, it has become necessary even in India to revisit and reassess the inflation expectations channel, notwithstanding the challenge that survey-based household inflation expectations are known to be biased and tend to differ from headline inflation persistently¹ (Singh *et al.*, 2022). The utility of the median household inflation expectations numbers to forecasting headline inflation in India is found to be limited (Pattanaik *et al.*, 2020). The use of several trimming methods to reduce bias in quantitative measures of household inflation expectations does not eliminate the problem completely (Das *et al.*, 2019). When raw expectations data are transformed to satisfy conditions of rationality, they seem to provide better forward-looking information (Shaw, 2019). In view of these identified issues in the literature for India about untreated raw household inflation expectations data, this article focuses on quantifying the biases in expectations. By constructing an inflation expectations anchoring index, we also examine how the degree of anchoring of inflation expectations in India evolved over time, especially during the FIT period relative to the pre FIT period.

Set against this context, Section II quantifies the extent of bias in household inflation expectations data and identifies the major sources of bias. It also examines major drivers of disagreement in inflation perceptions/expectations, namely differences in consumption baskets as derived from alternative data

¹ The RBI's first survey of household inflation expectations started in September 2005 and qualitative information was the focus in the first two rounds. From the third round in 2006, quantitative information (3-months ahead and 1-year ahead inflation expectations) from twelve cities was collected. Starting December 2012, data were collected from sixteen Indian cities. Currently, the survey covers 19 cities.

sources [such as consumer pyramid data published by the Centre for Monitoring Indian Economy (CMIE)], profession-wise differential sensitivity of expectations to food and fuel inflation, and also the role of income levels (in deciles), age and geographical location of households in driving heterogeneity in the formation of expectations. Section III generates a new bias-adjusted household inflation expectations series by accounting for the possible sources of bias and compares it with trends in actual inflation. Section IV compares the forecasting performance of the bias-adjusted inflation expectations series with that of the unadjusted series. For assessing the changing degree of anchoring of inflation expectations in India over time, Section V attempts to construct an inflation anchoring index taking into account three factors – sensitivity of inflation expectations to inflation shocks, dispersion in inflation expectations, and deviation of inflation expectations from the inflation target. Section VI provides concluding remarks.

II. Bias in Household Inflation Expectations

II.1 Measuring Bias in Inflation Expectations

Bias in inflation expectations, being a potential source of noise, can reduce the utility of inflation expectations data (collected by devoting considerable time and resources) to policymaking. Often, there is a lack of clarity on what exactly is the bias in inflation expectations. Therefore, we start with a formal definition of inflation expectations bias. The inflation expectations bias, B_t^h , at time t for horizon h is defined as the difference between inflation expectations for time $t + h$ taken at time t and the realised inflation at time $t + h$. That is:

$$B_t^h = E_t \pi_{t+h} - \pi_{t+h} \quad \dots(1)$$

In the case of India, we consider one-year ahead inflation expectations, and therefore we take $h = 1$ year ahead. The next challenge is to empirically estimate bias using Equation (1). If we regress inflation expectations for the current period as recorded a

period ago on the current realised inflation, we could generate a broad estimate of bias. This could be written as:

$$E_{t-1} \pi_t = \alpha + \beta \pi_t + \epsilon_t \quad \dots(2)$$

Here, the hypothesis of interest is whether $\beta = 1$. If $\beta = 1$, we have $\alpha = B_t^1$. This method, however, provides a single estimate of the bias, which is an average approximation for the period under consideration.

II.2 Bias in Inflation Expectations of Households in India

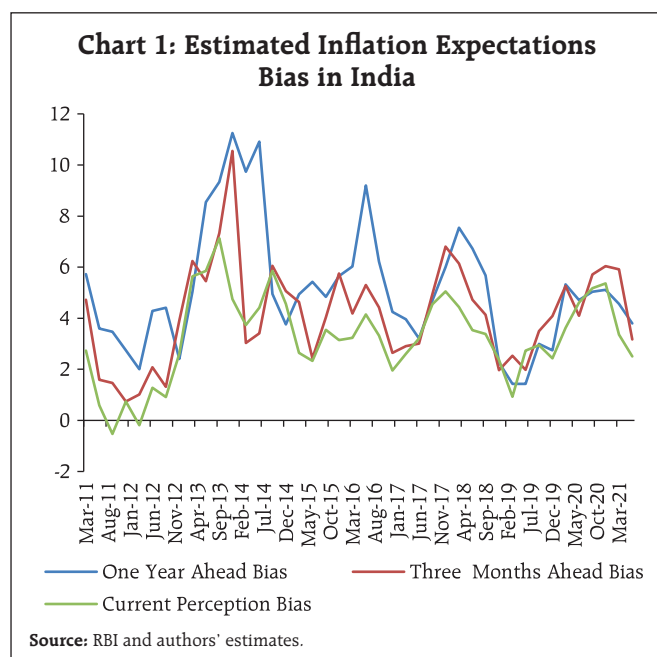
Given the need for assessing the evolution of bias over time, we consider bias as defined in Equation (1) and use data from the Inflation Expectations Survey of Households (IESH) for constructing a time series of biases². Estimated biases in inflation expectations from different measures are presented in Chart 1. A summary of descriptive statistics relating to biases in inflation expectations is reported in Table 1. We see that the extent of bias in inflation expectations is large, and the average size of bias goes up with the time horizon of inflation expectations increasing. One-year ahead expectations have the highest average biases and are the most volatile, indicating that the

Table 1: Summary Statistics of Inflation Expectations Bias

Variable	Observations	Mean	Std. Dev	Max	Min	ADF test p-value
One-year ahead	43	5.2	2.4	11.3	1.4	0.04 (stationary)
Three-months ahead	43	4.1	2.0	20.6	0.7	0.01 (stationary)
Current perception	43	3.2	1.7	7.1	-0.5	0.02 (stationary)

Source: Authors' estimates.

² The IESH survey elicits information on household inflation expectations through a structured questionnaire covering a wide range of diverse demographic aspects in terms of gender, age profile, and occupation status of the survey participants. The survey respondents report their current perception of inflation as well as inflation expectations for both three months ahead and one year ahead in numerical values. For the purpose of this study, we use quarterly data from Q1:2012 to Q2:2022.



agents are more uncertain about future inflation as the time horizon expands. We also find that the estimated biases across forecast horizons are stationary, but there has been the presence of a positive bias over time which is consistent and systematic.

II.3 Sources of Inflation Expectations Bias

Recognising that the extent of bias in the inflation expectations of households may be large, the next question we address is what could be the possible sources of this bias. To derive an inflation expectations series that is free of biases, understanding these sources is critical. Bias in inflation expectations can arise on account of several reasons. Since inflation expectations are formed based on the information set available with the economic agents, the forecast errors could reflect the delay in obtaining full information by the agents. If these errors have any systematic pattern, it would reflect as bias over time. This could be either on account of the cost of acquiring full information - making the information flow sticky, or on account of noisy information available with the agents – posing the challenge of deciphering true signals from the information. Inflation expectations bias could also be

a result of the differences in the consumption baskets across households. As prices of some items change disproportionately to the overall inflation on account of supply shocks, individuals with a larger share of consumption of those items may perceive inflation differently and accordingly change their expectations. Using the CMIE data on consumption expenditure from the Consumer Pyramids Household Survey (CPHS) database, we present the share of food and fuel within their consumption basket for different types of workers in Table 2. We can see that the shares vary significantly across occupation categories. The overall picture is that food and fuel still account for a significant share of consumption across occupation categories. While the share of food is relatively lower for workers in the formal sector, the share of petrol and diesel is higher for them. So, differences in consumption baskets of households can be a major source of bias in expectations.

Table 2: Share of Food and Petrol and Diesel in Consumption Basket Across Occupation Categories: CMIE CPHS July 2022 Release

Occupation Categories	Food Share	Petrol and Diesel Share
Home-based Workers	51.5	5.9
Miscellaneous	50.5	4.3
Agricultural Labourers	49.8	7.7
Wage Labourers	49.0	7.7
Small Traders/Hawkers	48.4	8.3
Small/Marginal Farmers	48.4	8.9
Non-industrial Technical Employees	48.0	9.1
Legislators/Social Workers/Activists	47.3	10.8
Support Staff	45.6	9.4
Self-employed Entrepreneurs	45.1	9.5
Industrial Workers	44.6	10.4
Retired/Aged	43.4	10.3
Business and Salaried Employees	42.0	11.9
Organised Farmers	41.5	13.7
Entrepreneurs	40.3	13.4
Qualified Self-employed Professionals	38.1	13.4
White-collar Clerical Employees	37.4	12.9
Managers/Supervisors	34.7	14.9
White-collar Professional Employees	34.4	14.6

Note: The rows are arranged in the descending order of food share.

Source: CMIE and authors' estimates.

Since the official CPI weights are based on the Household Consumption Expenditure Survey (CES) of 2011-12 conducted by the National Sample Survey Office (NSSO) while agents' inflation expectations are based on their most recent consumption basket composition, one may question the rationale behind the direct comparison of inflation expectations with actual inflation for any meaningful analysis. To examine this, we compare the share of food and fuel in CPHS with CPI weights based on the CES of 2011-12 (Table 3). It is seen that in CPHS, the share of food in total consumption even in 2022 remains almost equal to the official CPI weight for food that was set in 2011-12. It needs to be noted that there are methodological differences between the way consumption expenditures are recorded in CPI and CPHS. For example, CPHS includes expenditure

towards equated monthly instalments (EMIs) on loans, whereas CPI does not. This should have ideally pulled down the share of food in CPHS. Also, it has been argued that CPHS sample selection is more skewed towards urban areas and more affluent households.³ Even if those arguments hold true, they should have ideally reduced the share of food. As per CPHS data, strikingly, the share of food has remained close to the weight in the CPI basket over time (Chart 2). During the COVID lockdown period, the share of food increased, when the opportunity to spend on non-food items got severely curtailed.

The salience of price changes could be another source of bias as more frequent price changes of select items, which the households purchase more frequently, can influence their expectations. Inflation expectations are also likely to be more biased in the wake of higher inflation uncertainty. Those who are more uncertain about inflation tend to predict higher inflation. Also, if agents are rational, it is expected that they use full information in formulating their

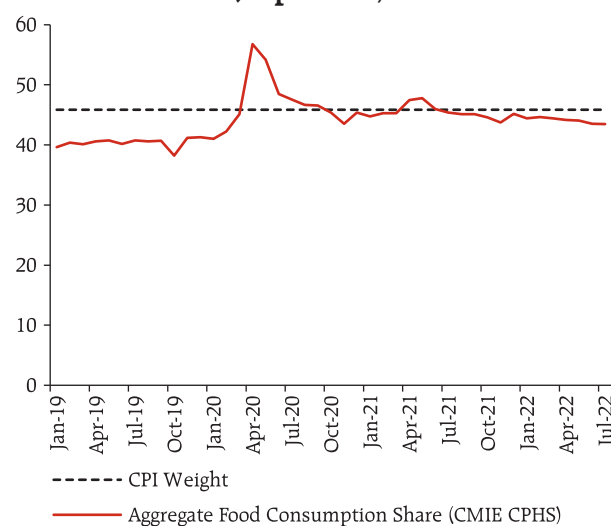
Table 3: Share in Total Consumption - CPHS versus CPI (July 2022 Release)

Items	CPI Basket Weights	CPHS Expenditure Share
Food Share	45.9	43.5
<i>of which</i>		
Cereals and Pulses	12.1	8.9
Vegetables and fruits	8.9	6.8
Eggs	0.4	0.7
Edible Oil	3.6	3.9
Meat and Fish	3.6	3.9
Milk and products	6.6	8.0
Others		
Clothing	5.6	2.1
Footwear	0.9	0.7
Education	4.5	2.9
Health	5.9	2.8
Cigarettes and Tobacco	2.8	2.4
Petrol and Diesel	2.3	10.7

Note: In another similar comparative study by Goyal, Pandey, and Sane (2021), it was found that the weight of food in CPHS in 2019 closely matched the weight of food in CPI – excluding housing, the weights of food in rural and urban areas were 51 per cent and 46 per cent, respectively, as per CPHS in 2019, as against 54 per cent and 46 per cent, respectively, in CPI. Patnaik, Shah, and Veronese (2011) also noted that the weight of food in the Consumer Pyramids dataset in 2009 was 44.9 per cent, as against 46.2 per cent in the CPI-IW, and within the food categories, the distribution of expenditure was not too dissimilar across the two sets of weights.

Source: CMIE; MoSPI (Govt. of India); and authors' estimates.

Chart 2: Share of Food in Total Expenditure (in per cent)



³ For example, as in the article "New barometer of India's economy fails to reflect deprivations of poor households" by Jean Dreze and Anmol Somanchi, Economic Times, June 21, 2021.

expectations and therefore underlying macroeconomic conditions could influence the bias in expectations. Ehrmann *et al.* (2017) showed that when respondents are pessimistic about the current employment situation, bias tends to be higher. Capistrán and Timmermann (2009) argued that agents tend to add a systematic upward bias to their inflation expectations to avoid the possibility of underprediction which entails a larger cost.

III. Adjusting for Inflation Expectations Bias

III.1 Theoretical and Empirical Insights

Given that bias in inflation expectations is not uncommon, for deriving meaningful information from the trends in inflation expectations, one would need to adjust the data for biases, an issue which has received considerable attention in the literature. Adjustment of biases has been carried out based on forecast values, past errors, and macroeconomic indicators (Mankiw *et al.*, 2003). Adjustment based on forecast values usually takes the form of estimating bias as a function of current inflation expectations. Adjustment to past errors in inflation expectations bias is usually done by regressing bias on change in inflation expectations implying that agents dynamically adjust for past errors, which might give rise to an accumulated bias component if they do not have perfect foresight. Bias could also result from fluctuations in macroeconomic variables such as unemployment rate, economic growth or interest rate, which could influence inflation expectations by altering their sentiments. It is found that agents usually tend to overstate their expectations during periods of economic pessimism.

Standard model specifications to study biases are often modified and extended in the literature, allowing the incorporation of new possibilities. Capistrán and Timmermann (2009) adjusted the bias by considering the volatility of inflation as higher inflation uncertainty could induce higher inflation expectations. Ballantyne *et al.* (2016) added deviation

of inflation from the target as an additional variable. Galvis Ciro and Zapata (2019) added an index of central bank credibility and the extent of complexity in central bank communication by using the Flesch index (a readability scale to measure the ease of reading a text). Studies that use micro-level data further refine the adjustment factor for bias at the individual level by incorporating consumer-level attributes, and controlling for the responses of individuals who show inconsistent behaviour (Ehrmann *et al.*, 2017). Studies have also incorporated variables like inflation news intensity and state of business cycles for adjustment of biases.

III.2 Adjustment of Inflation Expectations Bias for India

In this section, we address the issue of how to explicitly adjust for the inflation expectations bias (IEB) in IESH measures of inflation expectations. For our analysis, we restrict our domain to only median of one year ahead inflation expectations. Generally, for advanced economies, the IEB is estimated for 5 or 10 years ahead of inflation expectations whereas the maximum time frame from IESH that we have for India is one year. Following the literature, we identify a set of variables as determinants of IEB. First, we include the level of inflation as a determinant, as a higher realised inflation brings with it greater uncertainty about future inflation. Second, we include relative price volatility - a measure of the dispersion of inflation across items in the consumption basket. The relative price volatility at time t (RPV_t) for N product groups in the CPI basket is defined as:

$$RPV_t = \sqrt{\sum_{i=1}^N w_i (\pi_{i,t} - \pi_t)^2}$$

where, w_i , $\pi_{i,t}$, π_t represent the weight of the i^{th} group, inflation of the i^{th} group at time t , and overall inflation at time t , respectively. The RPV_t could also proxy inflation that is driven by supply shocks, as

variability in inflation across product groups goes up during periods of supply disruptions (Ball and Mankiw, 1995). Here, we use the all-India CPI-subgroup level data which comprises 23 categories. This measure captures the extent to which realised inflation diverges across different groups based on their consumption shares, which could be a source of inflation expectation bias.

We also include a measure of disagreement proxied by dispersion in inflation expectations within the survey which captures the heterogeneity in perception across age profiles, occupations, and cities. While these individual attributes can be a source of disagreement among respondents, they could be a possible source of aggregate IEB. For each of the characteristics, we define disagreement as the standard deviation of inflation expectations within that group. For example, the standard deviation of inflation expectations across age groups is the disagreement across age cohorts.

In order to account for the impact of macroeconomic conditions on IEB, we use real GDP growth as the proxy for agents' perceptions of current economic conditions. This could help in controlling for the counter-cyclical nature of IEB as during higher GDP growth with lower unemployment households are optimistic about the future and *vice versa* and these sentiments may induce IEB.

Table 4 presents our key results. As expected, the estimated bias series has a strong autoregressive component, indicating its persistence. The realised inflation positively influences the bias and the estimated impact is significant across all specifications. As inflation variability increases across product groups, bias tends to be higher indicating that during periods of supply shocks inflation expectation bias is higher. It was also found that disagreement in inflation expectations by respondents within the survey also positively influences IEB. The coefficient of the real

**Table 4: Explaining Inflation Expectations
Bias: Results**

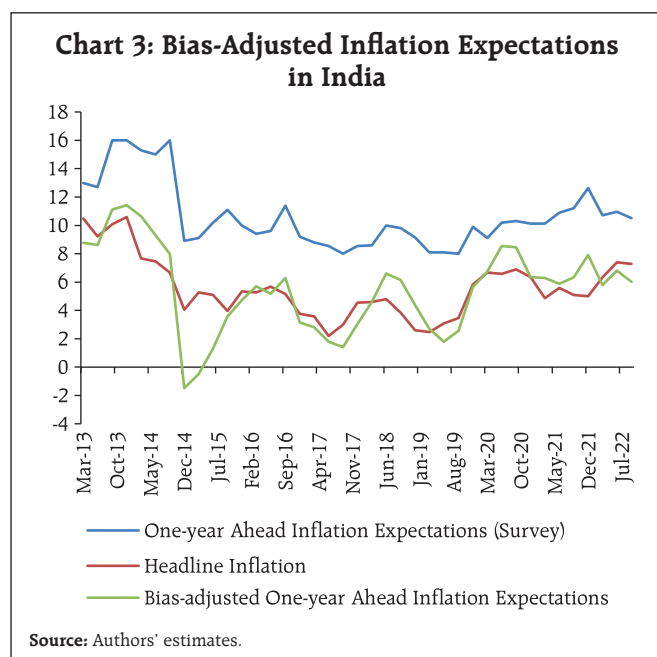
	(1)	(2)	(3)	(4)
	Bias _t	Bias _t	Bias _t	Bias _t
Bias _{t-1}	0.780*** (0.0815)	0.784*** (0.0825)	0.785*** (0.0782)	0.816*** (0.0680)
Headline Inflation _t	0.225*** (0.0732)	0.223*** (0.0755)	0.206** (0.0765)	0.155** (0.0755)
GDP Growth _t		-0.00562 (0.0110)	-0.00754 (0.0128)	-0.0380** (0.0145)
RPV _t			0.128* (0.0725)	0.153** (0.0726)
Inflation Expectations Disagreement _t				2.680** (1.116)
Constant	-0.166 (0.479)	-0.141 (0.493)	-0.680 (0.439)	-2.813*** (0.975)
No. of observations	38	38	38	38
R ²	0.79	0.79	0.80	0.82

Standard errors are in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$

GDP growth variable turns out to be negative and significant once we include the RPV_t and inflation expectations disagreements in our specification, which indicates that agents' bias in inflation expectations falls when they perceive better economic prospects.

Having established empirically the influence of these determinants on IEB, we now use the estimates to adjust inflation expectations data and derive a bias-adjusted inflation expectations series. We generate the bias-adjusted inflation expectations by adjusting for the predicted bias based on the fourth specification in Table 3. We see that once we adjust for biases, the inflation expectations series closely tracks the actual CPI inflation series, both in magnitude and direction (Chart 3). Only for a brief period from mid-2014 to early 2015, the bias-adjusted inflation expectations series deviated noticeably from the actual CPI inflation series.⁴

⁴ During this period, Indian basket crude oil prices fell precipitously (by 55 per cent between June 2014 and January 2015) and the transportation and communication sub-group registered a deflation (Monetary Policy Report, RBI, April 2015). Moreover, adoption of the inflation glide path, following the submission of the Expert Committee Report to Revise and Strengthen the Monetary Policy Framework in January 2014, also signalled greater commitment to price stability in the conduct of monetary policy.



IV. Bias-adjusted inflation expectations as a lead indicator of inflation

The utility of a bias-adjusted inflation expectations series could be assessed by examining its inflation forecasting performance relative to the unadjusted series. Applying a simple approach, we checked the Root Mean Squared Error (RMSE) and Mean Absolute Percentage Error (MAPE) of forecasts generated by using three different measures of inflation expectations (Table 5).⁵ Our results show that there

Table 5: Forecast Performance of Alternate Measures of Inflation Expectations

Variables	RMSE		MAPE	
	Overall	IT period	Overall	IT period
Unadjusted One-year Ahead Inflation Expectations	5.92	4.75	1.21	1.10
One-year Ahead Inflation Expectations <i>minus</i> the Average Bias	2.63	1.95	0.41	0.33
Bias Adjusted One-year Ahead Inflation Expectations	1.90	1.30	0.28	0.25

⁵ Here the projected CPI inflation at period t is a function of the measure of inflation expectation assessed by the households for period t at time $t-1$ (i.e., one year back).

is a significant improvement in forecast performance once we adjust for bias in inflation expectations. Also, a model-based adjustment of bias yields better forecast performance than a simple bias adjustment process that involves subtracting the average bias from the inflation expectations series. We also see that both the RMSE and MAPE came down in the period when India formally adopted the FIT framework.

V. Measurement of Anchoring of Inflation Expectations

The next important issue that we deal with is whether inflation expectations are anchored or not in India. For this purpose, we construct an inflation expectations anchoring index (IEA index) based on unadjusted household inflation expectations, as the challenge for anchoring inflation expectations relates to inflation expectations as revealed by households. The methodology for the construction of the IEA index broadly follows the approach by Bems *et al.* (2021) and Choi *et al.* (2022)⁶. For the construction of the index, we consider three dimensions that capture the contextual properties of inflation expectations anchoring: (1) sensitivity; (2) consistency; and (3) stability.

Sensitivity: Sensitivity refers to how inflation expectations react to the currently available information. If the sensitivity is lower, then inflation expectations are well-anchored, and *vice-versa* (Bernanke, 2007). To estimate the sensitivity, we use the specification of Choi *et al.* (2022):

$$\Delta E_t \pi_{t+1} = \alpha_t + \beta_t (\pi_t - E_t \pi_t) + u_t$$

⁶ A commonly used approach to measure anchoring of inflation expectations is to check whether the coefficient of backward-looking expectations (or lagged inflation) in a hybrid New Keynesian Phillips Curve (NKPC) declines over time or not. For Indian data, when household inflation expectations are used as a proxy for forward-looking inflation expectations along with lagged inflation in NKPC, the model yields misleading results (Pattanaik *et al.*, 2020). Hence, an alternative approach is adopted here. Specific factors that help improve anchoring of expectations include adoption of an inflation targeting regime, central bank transparency and also structural and fiscal factors in EMDEs such as lower public debt and greater trade openness (Ha *et al.* 2019).

Then we estimate the first dimension (d_1) by using the functional form:

$$d_1 = \frac{1}{1 + |\beta_t|}$$

When $\beta_t = 0$, d_1 goes to 1, and when $\beta_t \rightarrow \infty$, it goes to 0. Thus, higher the value of d_1 , higher is the degree of anchoring.

Consistency: The second dimension (d_2) refers to the consistency of inflation expectations with the central bank's inflation target (Bems *et al.*, 2021). d_2 is given by:

$$d_2 = \frac{1}{1 + |E_t \pi_{t+1} - 4|}$$

If inflation expectations of agents are aligned to the inflation target (4 per cent for India), *i.e.*, if the extent of deviation of expectations from the target is lower, higher is the consistency.

Stability: Both d_1 and d_2 are based on the average measure of inflation expectations from the survey data. But these dimensions do not capture the distributional aspects of the responses. If there is greater disagreement among the respondents, a third dimension (d_3) approximated through the standard deviation of inflation expectations reported by respondents in the survey could be useful. The third dimension is given by:

$$d_3 = \frac{1}{1 + \sigma_{E_t \pi_{t+1}}}$$

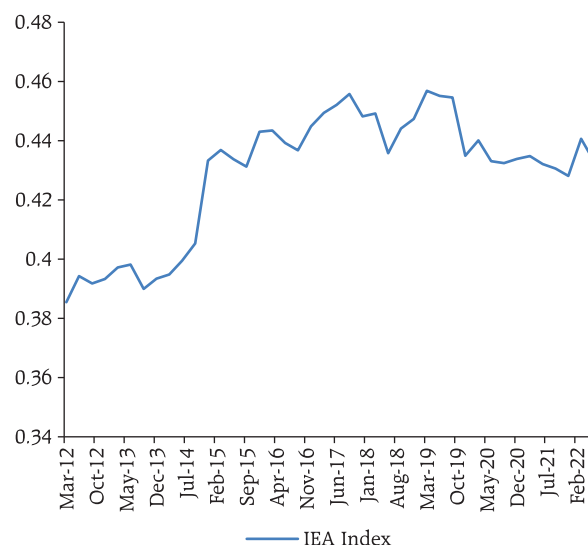
The lower the standard deviation, the higher the degree of anchoring and *vice-versa*.

The composite IEA index is constructed by taking the simple arithmetic average of the above three dimensions.

$$IEA\ Index = \frac{d_1 + d_2 + d_3}{3}$$

The IEA takes a value between 0 and 1 at different points in time, where 0 refers to completely

Chart 4: Inflation Expectations Anchoring Index



Source: Authors' estimates.

unanchored expectations and 1 refers to completely anchored inflation expectations.

Our results show that the performance on anchoring inflation expectations improved during the FIT period before the pandemic struck (as reflected in the higher value of the index), and the improvement was primarily driven by consistency, signifying greater credibility around the inflation target (Chart 4). Post-COVID, however, the moderation in the index is largely on account of repeated supply shocks that led to realised inflation overshooting the target as well as greater disagreement in inflation expectations, which impacted both consistency and stability factors driving the IEA index.

VI. Conclusion

This article finds that household inflation expectations in India suffer from significant biases. There are multiple sources of such biases ranging from the overwhelming influence of own consumption basket in forming expectations, given limited/no knowledge about the true measure of inflation in the economy to individual assessment of the outlook for one's income and employment and ability to sustain

consumption and savings, which could be influenced by the level of inflation, state of economic growth, interest rates, and supply shocks facing the economy. When the household inflation expectations data series is adjusted for estimated biases, such a series exhibits better alignment with headline CPI inflation, with higher predictive power for forecasting headline inflation. The inflation expectation anchoring index shows that anchoring has improved since the adoption of the flexible inflation targeting (FIT) framework, but post-COVID, successive supply shocks that caused realised inflation to overshoot the target have increased the risk of de-anchoring expectations.

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Government Finances 2022-23: A Half-Yearly Review*

by Aayushi Khandelwal[^], Rachit Solanki[^],
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Samir Ranjan Behera[^] and Atri Mukherjee[^]

The finances of the Central government as well as the States remained resilient in H1:2022-23, with the receding impact of the pandemic on economic activity, even as the war in Europe warranted higher expenditure on subsidies and targeted fiscal measures to tame inflation. The gross fiscal deficit of the general government remained contained in both the quarters of H1:2022-23, while higher capex by the Centre provided sustained impetus to recovery of growth. Going forward, the States need to speed up their capex within their higher budgetary space in H2:2022-23.

I. Introduction

The Union Budget 2022-23 was presented at a time when the Indian economy was still recovering from the contractionary impact of the COVID-19 pandemic with high vaccine coverage infusing confidence for faster normalisation of economic activity. Against this backdrop, while catalysing the recovery process through a record level of capital expenditure and greater focus on infrastructure, the Union Budget for 2022-23 aimed at feasible order of fiscal consolidation with the intent to lower the fiscal deficit to below 4.5 per cent of GDP by 2025-26. The States too have endeavoured for fiscal consolidation in 2022-23, budgeting a consolidated GFD of 3.3 per cent¹ of the GDP, down from 3.6 per cent in

2021-22 (RE). The performance of government finances, as evident from this half yearly review has been robust, notwithstanding the macroeconomic effect of the war in Europe.

The Centre's tax collections surpassed expectations on the receipts side, with all major heads such as income tax, corporation tax, and goods and services tax (GST) recording high growth. The Central government also ensured front-loaded capital expenditure. In States' case, the revenue receipts, driven by strong growth of tax revenues, have performed well resulting in a marked improvement in their GFD for H1:2022-23. States have also sustained the pace of their total expenditure.

The rest of the article is structured as follows: Section II analyses the receipt and expenditure of the Centre and States (at a quarterly frequency) for H1:2022-23.² Section III deals with the outcomes in terms of key deficit indicators and their financing. Section IV presents estimates on general government (Centre *plus* States) finances for Q1 and Q2 of 2022-23 along with projections for the second half of 2022-23. Section V sets out the concluding observations and the near-term fiscal outlook.

II. Fiscal Outcomes in Q1 and Q2 of 2022-23

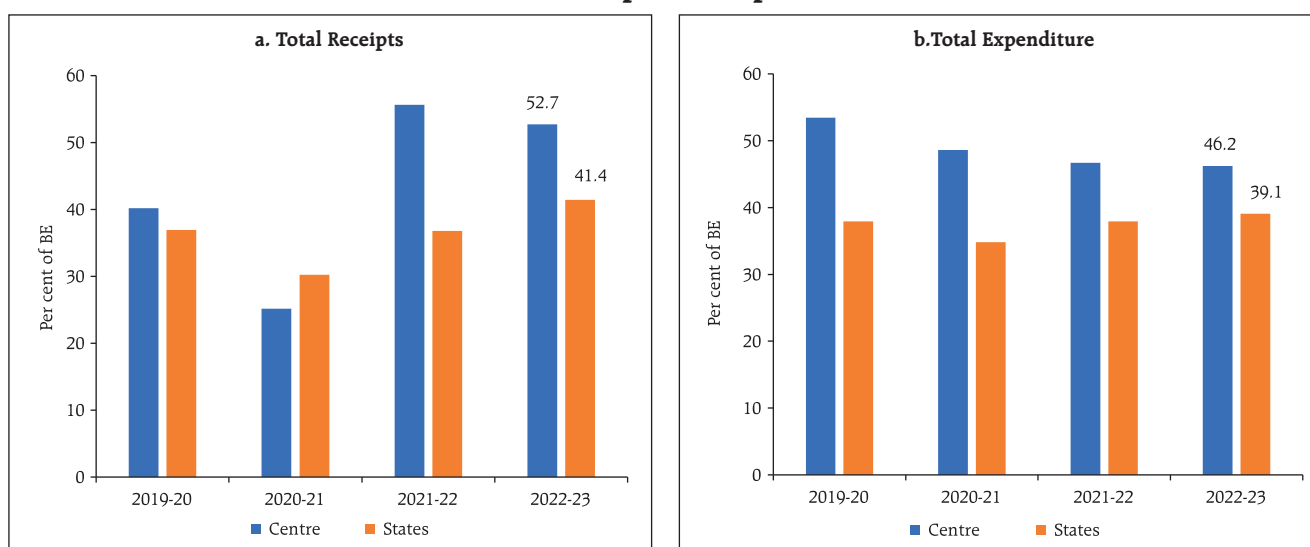
In line with the previous year, more than 50 per cent of the budgeted total receipts of the Central government were realised during H1:2022-23. On the other hand, the total expenditure of the Central government remained contained at 46.2 per cent of budget estimates (BE), as against an average of 53.5 per cent of BE during 2017-18 to 2019-20, despite the challenges posed by the war in Europe on macroeconomic outcomes. The fiscal performance of the States has been robust, with an improvement in their budgetary deficits in H1:2022-23. The States'

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¹ The data pertains to 23 States for which the data for April-September 2022 is available. The GFD-GDP ratio is estimated using GSDP data for the same 23 States.

² The Appendix Tables 1 to 4 provide item-wise data regarding the budgetary position of the Central government as well as State government finances on a half-yearly as well as quarterly basis.

Chart 1: Total Receipts and Expenditure in H1

Sources: Controller General of Accounts (CGA); and Comptroller and Auditor General (CAG).

total receipts have been strong, as reflected in a higher proportion of budgeted total receipts collected in H1:2022-23, compared to those collected in the previous years. On the expenditure side, the States have expended 39.1 per cent of their budgeted total expenditure during H1:2022-23, broadly in line with their past spending patterns (Chart 1 a and b).

a. Receipts

Revenue receipts of the Central government registered a growth of 5.2 per cent in Q1:2022-23, as robust growth in tax revenues was partly offset by a contraction in non-tax revenues on the back of lower dividend transfer from the Reserve Bank. With a pick-up in non-tax revenues in Q2:2022-23, the growth in revenue receipts improved to 11.2 per cent. Non-debt capital receipts³ increased by 278.0 per cent in Q1:2022-23, led by the successful initial public offer (IPO) of Life Insurance Corporation

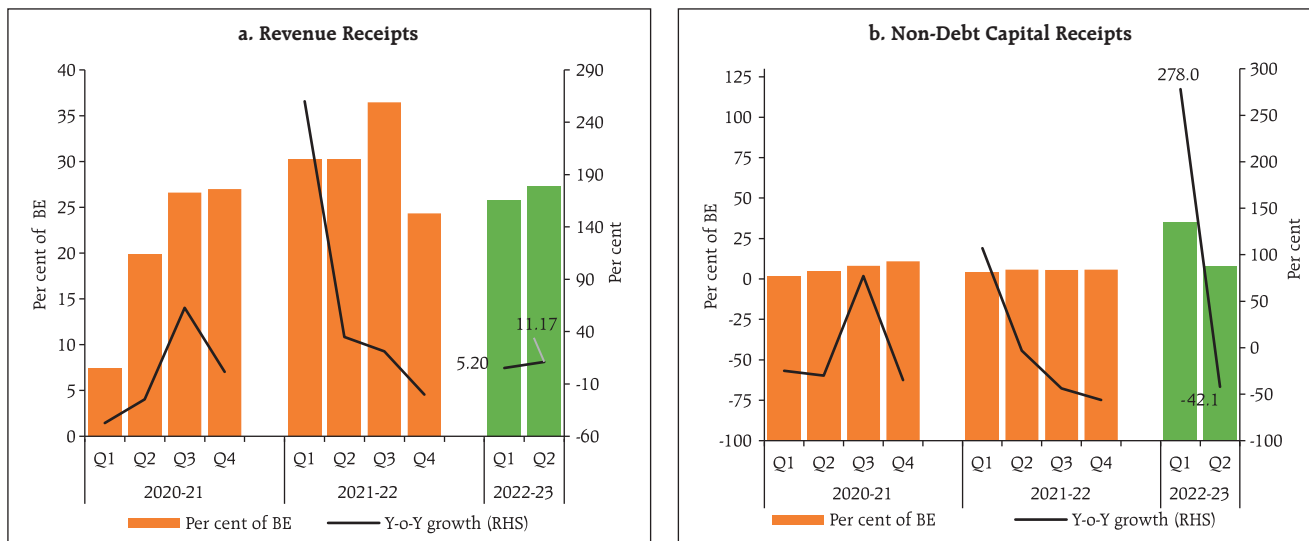
(LIC), but remained lackluster in Q2:2022-23 (Chart 2 a and b).

States' revenue receipts have witnessed a robust y-o-y growth of 26.3 per cent in H1:2022-23 - 32.6 per cent and 21.1 per cent in Q1:2022-23 and Q2:2022-23, respectively. Tax revenue, which accounted for 76 per cent of the revenue receipts during H1:2022-23, grew at 36.8 per cent and 28.5 per cent in Q1:2022-23 and Q2:2022-23, respectively. The non-debt capital receipts of the State government⁴ remained modest in Q1:2022-23 and Q2:2022-23 (Chart 3 a and b).

The Centre's direct tax collections registered a y-o-y growth of 23.2 per cent in H1:2022-23, led by the growth in income tax and corporation tax by 25.7 per cent and 21.6 per cent, respectively. In Q1:2022-23, the Centre's direct tax collections grew by 35 per cent whereas in Q2:2022-23 it recorded a growth of 14.5 per cent on a y-o-y basis (Chart 4a). On the other hand, while the Centre's indirect tax collections increased by 11.9 per cent during H1, there was a contraction in customs and union excise duty collections on account of (i) cuts in excise duty on petrol and diesel in May 2022, and (ii) reduction

³ Non-debt capital receipts include recoveries of loans and advances and miscellaneous capital receipts (*viz.*, disinvestment and other receipts).

⁴ Non-debt capital receipts of States comprises of recoveries of loans and advances disbursed by them to subordinate/ parastatal entities and other miscellaneous capital receipts.

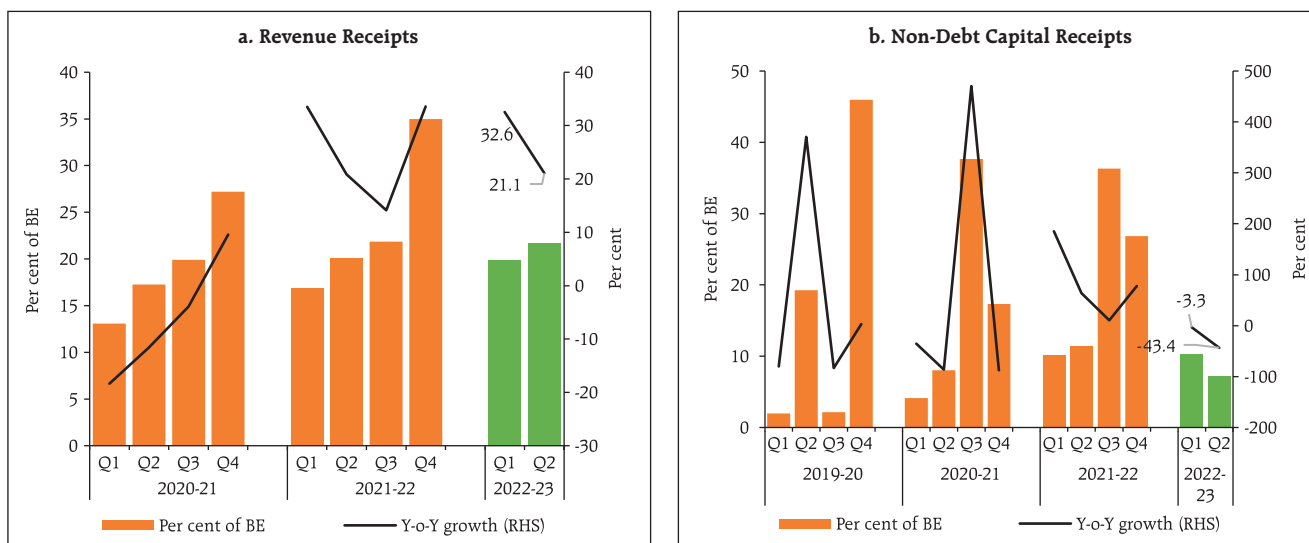
Chart 2: Quarterly Breakup of the Centre's Receipts

Sources: Controller General of Accounts (CGA); and Budget documents of Union government.

in customs duty on key raw materials and inputs for the steel and plastic industry as well as commodities such as cotton and vegetable oil, which were aimed at taming inflation.

States' own direct tax collections performed well during H1:2022-23 (Chart 4b).

The GST collections (Centre *plus* States) have remained buoyant, recording a y-o-y growth of 32.2 per cent and averaging ₹1.5 lakh crore during H1:2022-23, as against an average of ₹1.1 lakh crore during H1:2021-22. In Q1:2022-23, the GST collections recorded a growth of 37.1 per cent whereas in

Chart 3: Quarterly Breakup of the States' Receipts

Sources: CAG; and Budget documents of State governments.

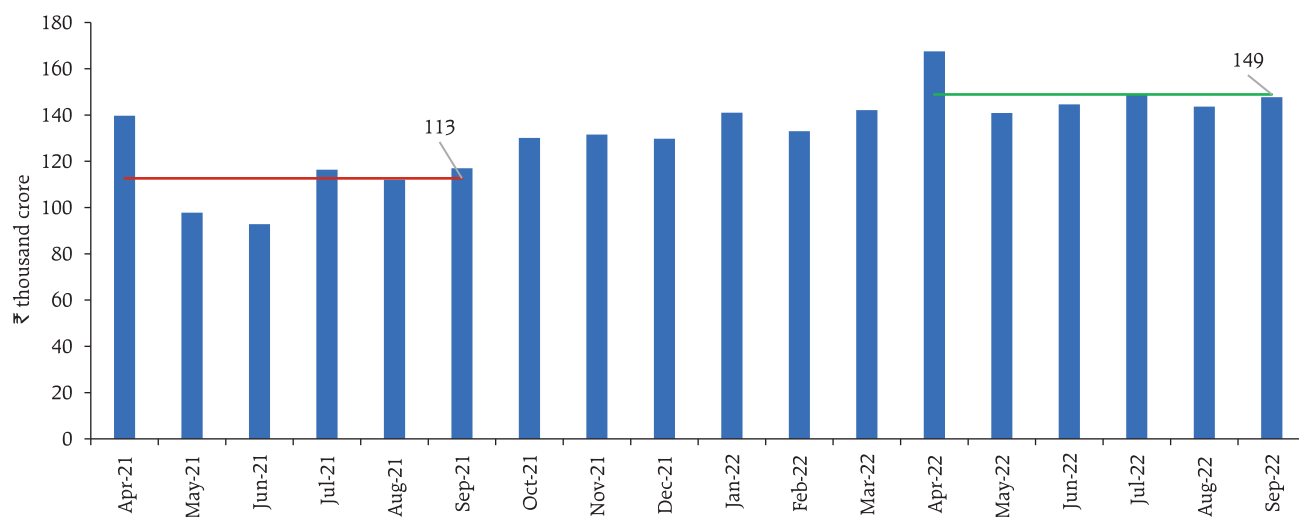
Chart 4: Quarterly Direct Tax Collection

Sources: Controller General of Accounts (CGA); and Comptroller and Auditor General (CAG).

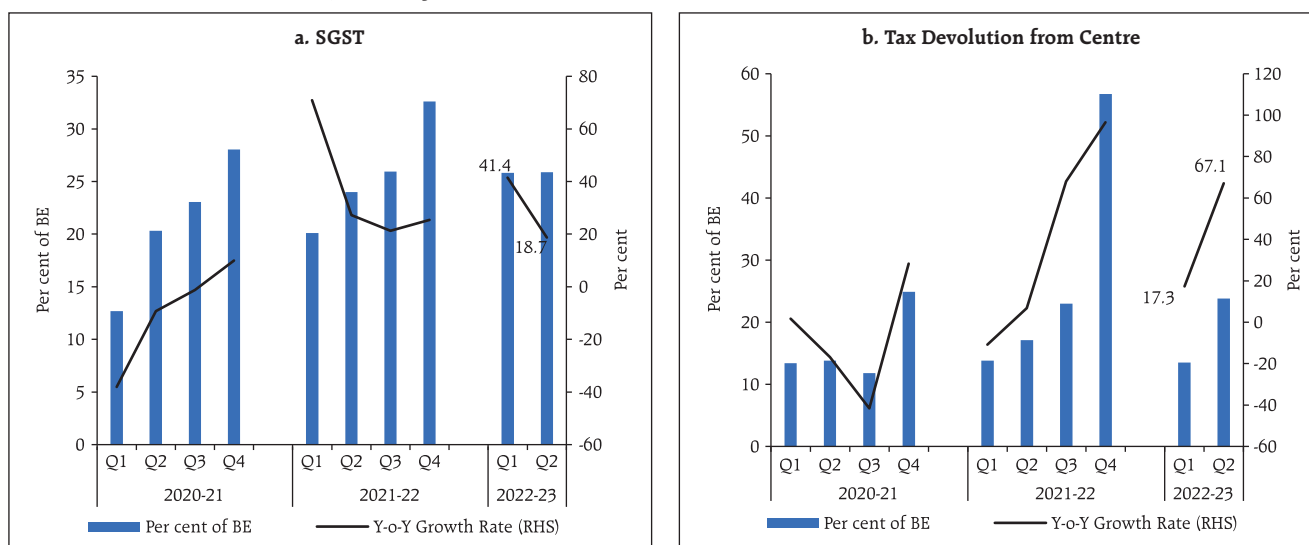
Q2:2022-23 it registered a growth of 27.5 per cent on a y-o-y basis (Chart 5).

In the case of States, two major factors which have contributed to the growth in tax revenues are the higher and stable collection of States GST (SGST) and tax devolution from the Centre (on account of higher

buoyancy in direct taxes, GST, and higher inflation). In order to support the States in accelerating their capital outlay, the central government front-loaded the tax devolution in August 2022 by releasing two instalments of tax devolution amounting to ₹1.16 lakh crores (Chart 6 a and b).

Chart 5: GST Collections

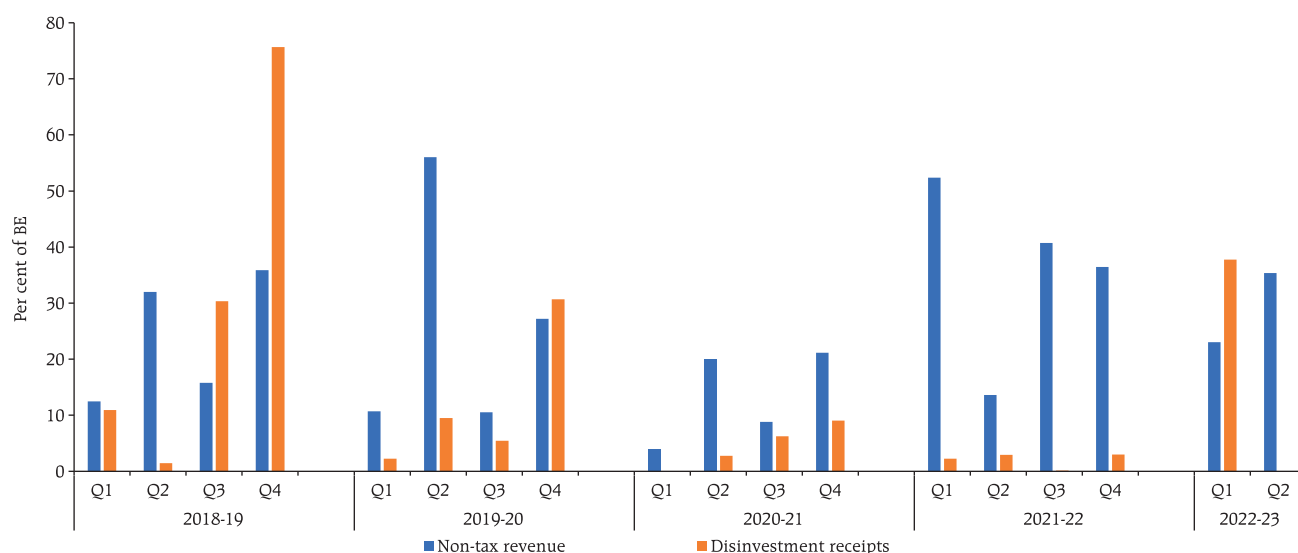
Note: The red and green line represent the average GST collections over those months.
Source: Press Information Bureau (PIB) releases.

Chart 6: Quarterly Performance of SGST and Tax Devolution from Centre

Sources: Comptroller and Auditor General (CAG); and Budget documents of State governments.

Centre's non-tax revenues contracted in Q1:2022-23 due to lower surplus transfer from the Reserve Bank but witnessed a sharp up-tick in Q2, primarily owing to an increase in non-tax collections from economic services.⁵ However, on the disinvestment front, 37.8

per cent of the budgeted disinvestment target of ₹65,000 crore has been raised in H1, primarily owing to the LIC IPO (Chart 7). In the case of States, the non-tax revenue grew at 55.6 per cent in Q1:2022-23 and 13.3 per cent in Q2:2022-23.

Chart 7: Non-tax Revenue and Disinvestment Receipts of the Central Government

Source: CGA.

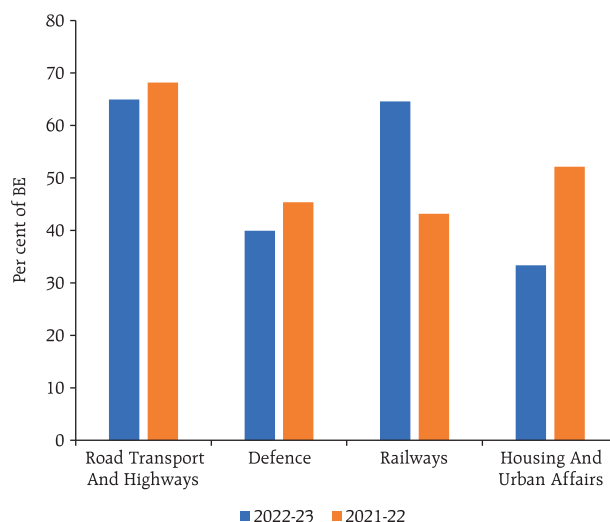
⁵ Non-tax revenue from economic services includes agriculture and allied activities (receipts from agricultural farms, commercial crops, fees from agricultural education, fees for quality control and grading of agricultural products, etc.), irrigation and flood control (receipts of Central Water Commission and Central Water Power Research Station, Pune, etc.), communication (includes license fees from telecom operators and receipts on account of spectrum usage charges) etc. Non-tax revenue from economic services accounts for 40.8 per cent of budgeted non-tax revenues in 2022-23.

b. Expenditure

In 2022-23 (BE), the total expenditure of the central government was budgeted to grow by a modest 4.6 per cent⁶, on top of 7.4 per cent growth in 2021-22 (RE), with revenue expenditure growth budgeted at 0.9 per cent and capital expenditure growth at 24.5 per cent.⁷ However, in March 2022 the Union government announced Phase VI of the *Pradhan Mantri Garib Kalyan Anna Yojana* for the period April to September 2022, with an estimated additional cost of ₹80,000 crore.⁸ Subsequently, Phase VII of the scheme was also announced for the period October-December 2022, with an estimated additional cost of ₹44,762 crore.⁹ Further, the Union government has approved additional fertiliser subsidy of ₹1.13 lakh crore over and above the budget estimates, to insulate the farmers from rising international fertilizer prices.^{10,11} The Union government also placed before the Parliament the first batch of supplementary demand for grants for 2022-23 during the winter session of the parliament¹² which involved additional cash outgo.¹³ Owing to these developments, the growth in total expenditure and revenue expenditure is expected to exceed the budget estimates.

During H1:2022-23, total expenditure recorded a y-o-y growth of 12.2 per cent, with revenue expenditure and capital expenditure increasing by 6.0 per cent and 49.5 per cent, respectively.¹⁴ Even though in H1:2022-23 around half of the budgeted capital expenditure

Chart 8: Capital Expenditure of Key Ministries in H1:2021-22 and H1:2022-23



Source: CGA.

has been spent, it has recorded a high y-o-y growth of 49.5 per cent attributable to the frontloading of capital expenditure *vis-à-vis* previous years. In this period, key ministries such as the Ministry of Road Transport and Highways, the Ministry of Defence and the Ministry of Railways have accounted for more than 80 per cent of the total capital expenditure (Chart 8).

Going forward, in H2:2022-23, after accounting for the impact of major post-budget announcements, total expenditure growth is likely to spike to 14.9 per cent, with revenue expenditure growth picking up to 13.8 per cent and capital expenditure slowing down to 20.6 per cent (Chart 9).

The trend in quarterly expenditure indicates a decline in expenditure growth from Q1:2022-23 to Q2:2022-23. In the case of revenue expenditure as well as capital expenditure, the expenditure growth (y-o-y basis) in Q2:2022-23 turned out to be lower *vis-à-vis* the corresponding period of the previous year *viz.*, Q2:2021-22. This is primarily due to the base effect, as Q2:2021-22 recorded high expenditure growth when expenditure had to be frontloaded and expanded to deal with the second wave of the pandemic (Chart 10 a and b).

⁶ Over 2021-22 (PA), the total expenditure of the central government in 2022-23 (BE) is budgeted to grow by 4.0 per cent.

⁷ Capital outlay (capital expenditure excluding loans and advances) was budgeted to increase by 11.5 per cent in 2022-23, on top of an increase of 73.3 per cent in 2021-22 (RE).

⁸ <https://pib.gov.in/PressReleasePage.aspx?PRID=1810048>

⁹ <https://pib.gov.in/PressReleasePage.aspx?PRID=1862944>

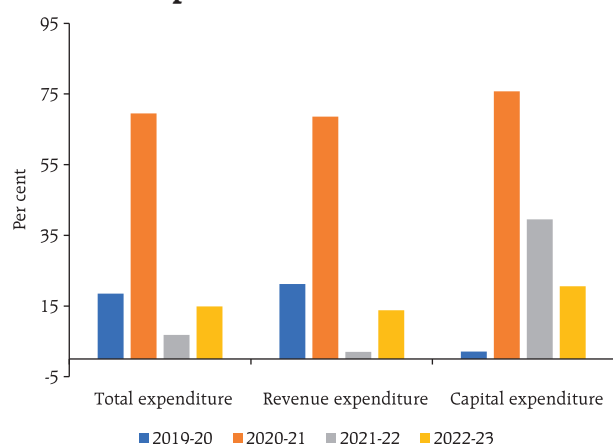
¹⁰ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1820522>

¹¹ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1873018>

¹² Held during December 2022.

¹³ <https://dea.gov.in/sites/default/files/%21st%20Supplementary%20Demand%202022-23.pdf>

¹⁴ During H1:2022-23, capital outlay grew by 52.2 per cent *vis-a-vis* a growth of 41.3 per cent during H1:2021-22 on a y-o-y basis.

Chart 9: Expenditure Growth in H2:2022-23

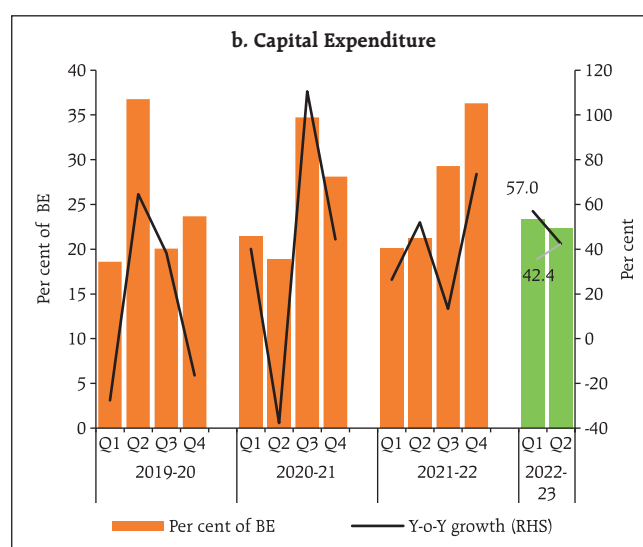
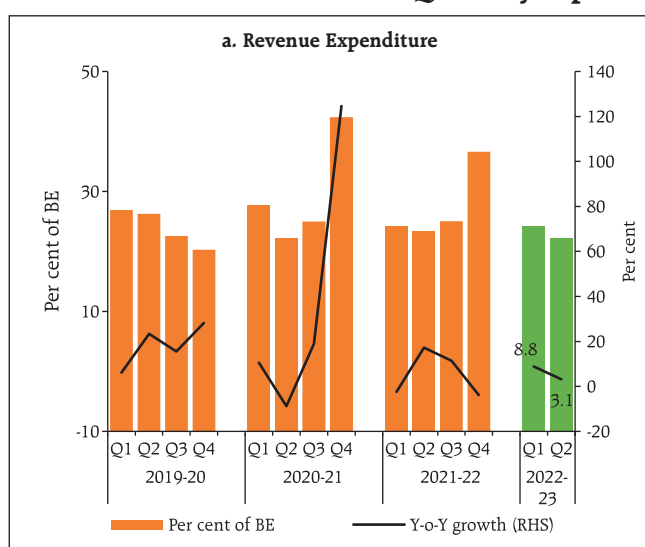
Note: Expenditure growth for 2022-23 is the implied growth rate based on actuals up to September 2022 and budget estimates *plus* expenditure proposals in the first supplementary demand for grants as well as announcements by the Union government.

Sources: CGA; Union Budget documents; supplementary demand for grants and Press Information Bureau (PIB) releases.

The major subsidies outgo of the Central government, comprising food, fuel and fertilisers stood at 62.6 per cent of BE in H1:2022-23 compared to 53.8 per cent of BE in H1:2021-22, recording a y-o-y growth of 9.9 per cent. Food subsidy accounted

for 58.4 per cent of total outgo on major subsidies in H1:2022-23 *vis-à-vis* 72.5 per cent in the corresponding period of last year (Chart 11).

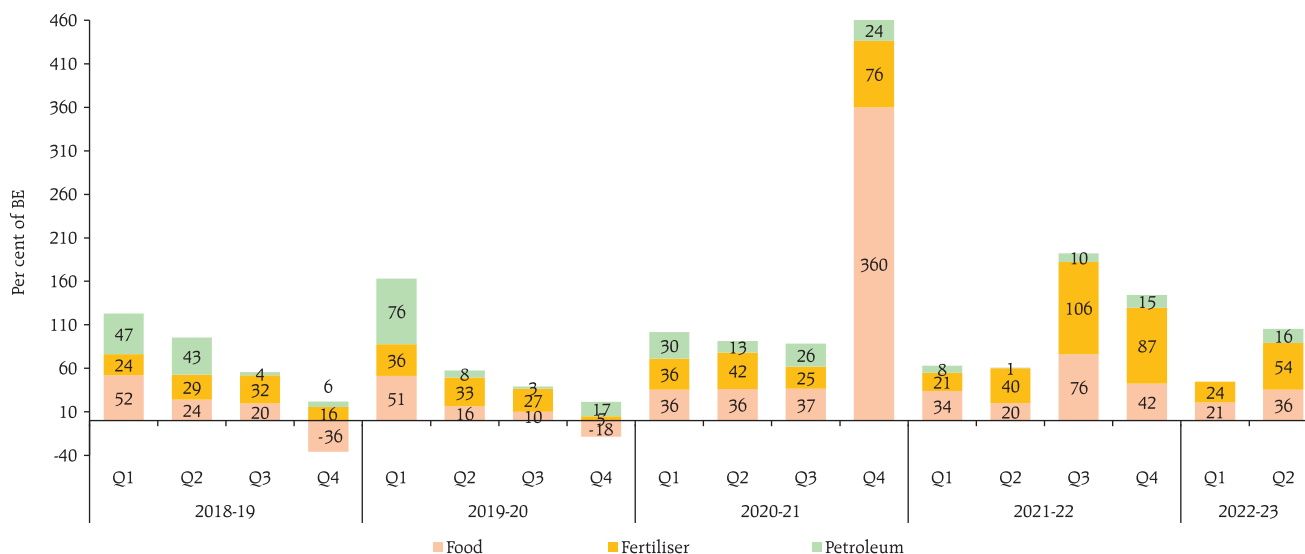
States' revenue expenditure remained healthy in the first two quarters of 2022-23 with its growth turning out to be slightly higher than that in the corresponding period of the previous year. Keeping in line with their past spending pattern, States have exhausted 41.4 per cent of their budgeted revenue expenditure in H1:2022-23. On the other hand, the capital expenditure by the States has remained anaemic so far. In Q1:2022-23¹⁵, the capital outlay by the States contracted by 9.9 per cent. Though the growth recovered during the next quarter, it remained feeble. The growth rate of capital expenditure and more importantly the capital outlay in H1:2022-23 has been muted at 7 per cent and 2.1 per cent, respectively (Chart 12 a and b).¹⁶ Normally, the States tend to back-load their expenditure in the latter half of the year. Going forward, it is expected that the States may boost their capital expenditure.

Chart 10: Quarterly Expenditure of the Central Government

Sources: CGA; and Union Budget documents.

¹⁵ States' capital expenditure posted a y-o-y growth of -9.5 per cent (i.e., contraction) and 19.0 per cent in Q1:2022-23 and Q2:2022-23, respectively.

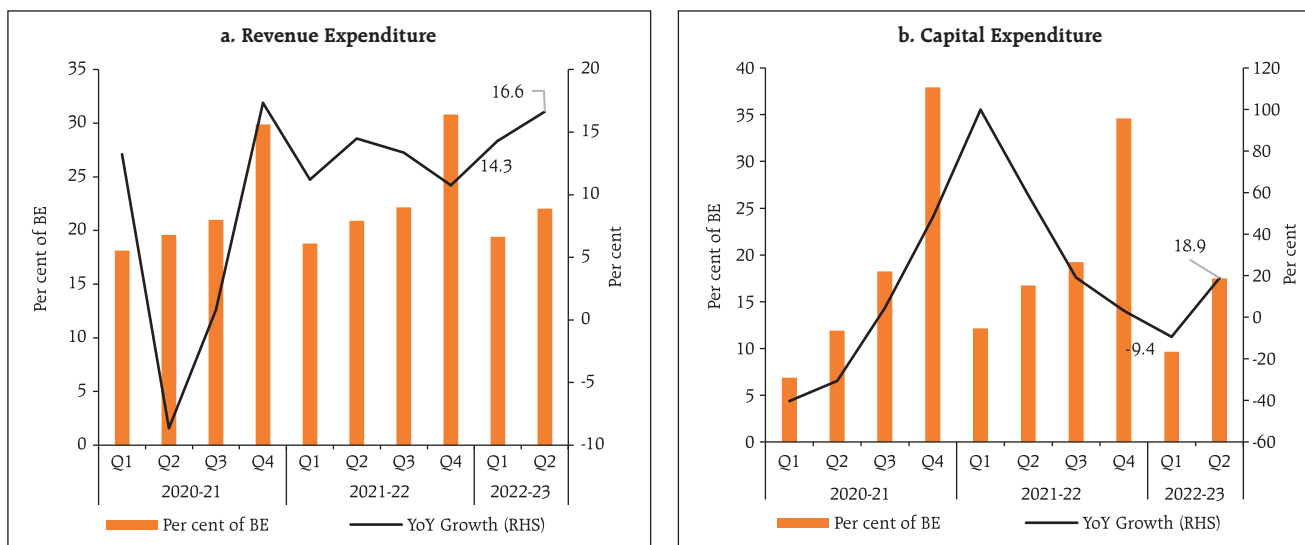
¹⁶ States' Capital Expenditure is composed of their direct Capital Outlay and the loans and advances extended by them to subordinate/parastatal entities.

Chart 11: Quarterly Expenditure on Major Subsidies by the Central Government

Sources: CGA; and Union Budget documents.

The effort of the States would be supplemented by augmented availability of resources following the relaxation of norms pertaining to off-budget

borrowings¹⁷, front-loading of tax devolution by the Centre, payment of GST compensation cess and pick up in the loans by the States under the

Chart 12: Quarterly Expenditure of State Governments

Sources: CAG; and Budget documents of State governments.

¹⁷ In March 2022, the Centre had stipulated the States to adjust their off-budget borrowings of 2020-21 and 2021-22 against the borrowing limits for 2022-23. However, in July 2022, the Centre relaxed these norms allowing the States to adjust their off-budget borrowings of 2021-22 against the borrowing limits of the next four years till March 2026.

Scheme for Special Assistance to States for Capital investment.¹⁸

III. Fiscal Deficit and its Financing

a. Fiscal Deficit

Central Government

After attaining a GFD of 6.7 per cent of GDP in 2021-22 (PA), the Union government has budgeted for a GFD of 6.4 per cent of GDP in 2022-23 with the medium-term target of bringing down the GFD below 4.5 per cent of GDP by 2025-26. During H1:2022-23, the GFD of the Union government stood at 37.3 per cent of the BE, marginally higher than the GFD of 35.0 per cent during the corresponding period of the previous year (*viz.*, H1:2021-22). In comparison with the corresponding period of the previous year, the fiscal deficit rose during H1:2022-23, attributable to higher subsidy bills and front loading of capital expenditure. On the brighter side, higher tax collections helped

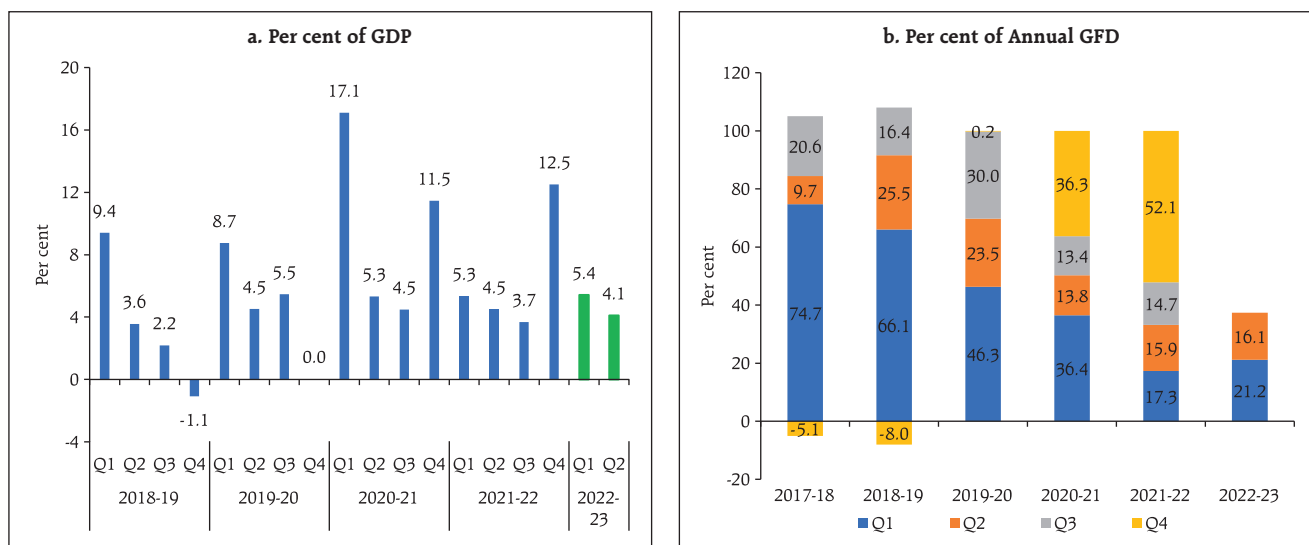
offset higher subsidy bills and helped contain the fiscal deficit (Chart 13 a and b).

State Governments

The States had budgeted a consolidated GFD of 3.3 per cent of GDP for 2022-23 (BE), lower than 3.6 per cent in 2021-22 (BE). In Q1:2022-23 and Q2:2022-23, the States have exhausted a lower proportion of their budgeted GFD as against the same in the corresponding period of the previous year. Consequently, the fiscal space available to States in the latter half of the year has expanded to 71 per cent of their budgeted GFD in 2022-23, a sharp rise from 57.2 per cent for the corresponding period of the previous year (Chart 14).

While the GFD of the States has improved in the post-pandemic period, the debt level of the States continues to remain high.¹⁹ Moreover, the implicit debt of the States in the form of State guarantees (*viz.*, contingent liabilities) has also seen a considerable

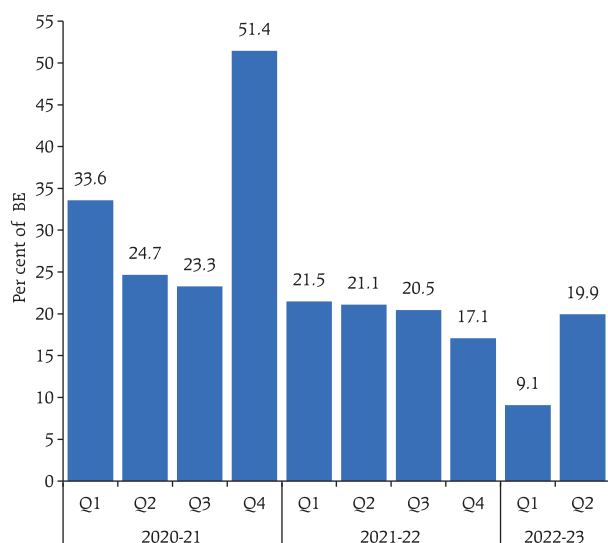
Chart 13: Centre's Gross Fiscal Deficit



Sources: CGA; and Union Budget documents.

¹⁸ The Centre has again renewed the Scheme for Special Assistance to States for Capital investment for FY2022-23 with an enhanced allocation of ₹1 lakh crore. As these 50-year interest-free loans are over and above the 4 per cent of GSDP ceiling for the States, they will enable the States to undertake capital spending on a more consistent basis.

¹⁹ States' cumulative debt stands at 31.2 per cent of GDP [2021-22 (BE)], highest since 2006-07 (RBI, 2021).

Chart 14: States' Gross Fiscal Deficit

Sources: CAG; and Budget documents of State governments.

rise in the recent past, which may expose some of the States to additional fiscal risks (Box I).

The quality of expenditure [measured by revenue expenditure to capital outlay (RECO)] for the Centre recorded significant improvement in Q1:2022-23 and Q2:2022-23²⁰, attributed to the higher thrust placed by the Central government on capital expenditure. In contrast, the expenditure quality of the States suffered a setback on account of subdued capital outlay by the States. In Q1:2022-23 and Q2:2022-23 their RECO ratio inched up to 11.6 and 7.2, respectively, higher than the levels in the corresponding period of the last year. Though the revival of capital outlay in Q2:2022-23 helped in improving the expenditure quality, it still leaves room for further improvement.

Box I: State Government Guarantees – Recent Trends

State governments often issue guarantees on behalf of several subordinate, independent and parastatal entities - including State-owned enterprises, cooperative institutions and urban local bodies. These guarantees do not explicitly form a part of the debt burden of the State government but are classified as 'Contingent Liabilities' of the State government as they are only invoked at the occurrence of a specified event agreed in the guarantee contract. Any significant invocation of these guarantees will raise their debt to GDP ratios further.

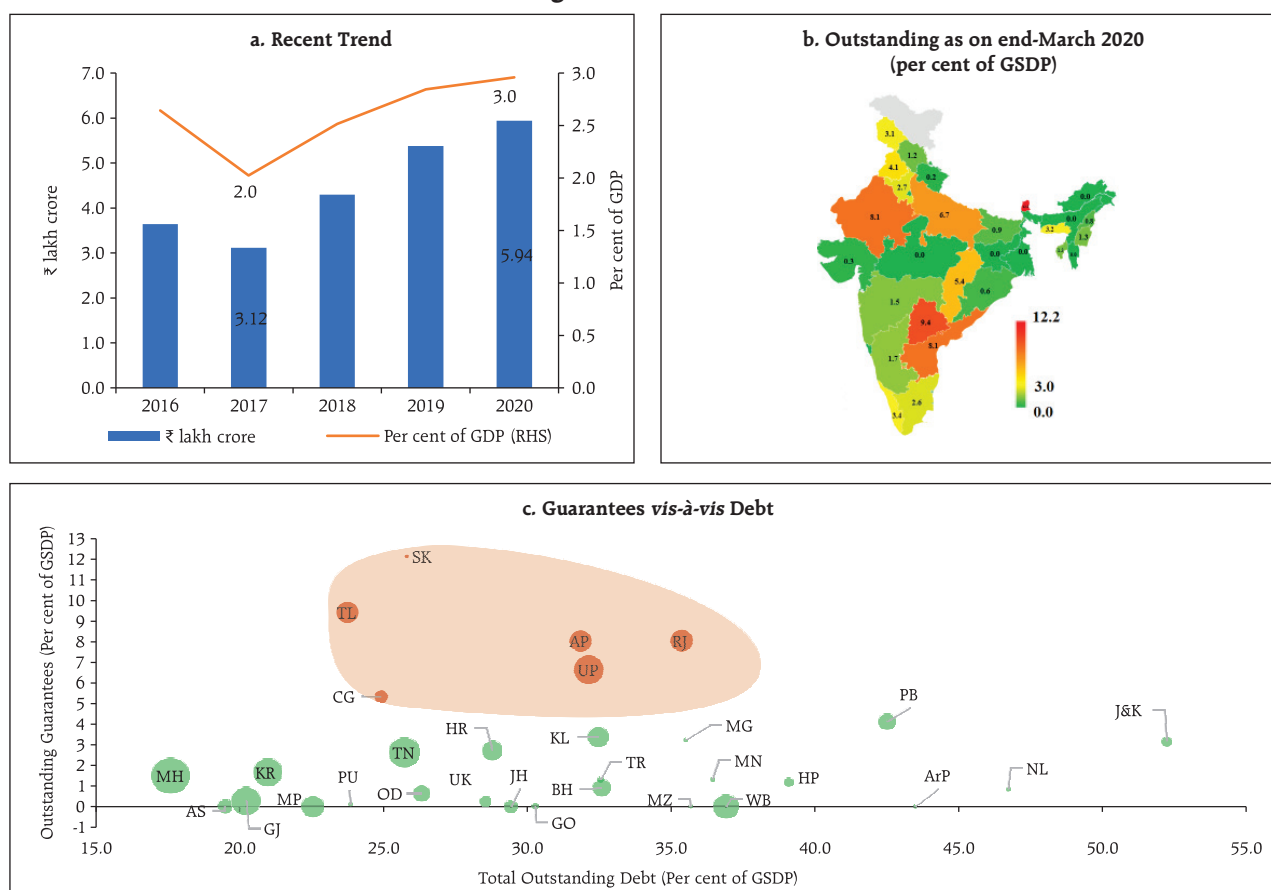
Over the past few years, the cumulative guarantees by the States have been on a rising trajectory (Chart 1a). There are significant inter-state variations in exposure to contingent liabilities. Amongst major States, Telangana, Rajasthan, Andhra Pradesh, Uttar Pradesh and Chhattisgarh had issued guarantees amounting to over 5 per cent of their GSDP (Chart 1b). It is noteworthy that in the case of some of these States, the quantum of outstanding guarantees now compares sizably to their existing debt stock (Chart 1c). For instance, outstanding guarantees in respect of Telangana, Andhra Pradesh, Rajasthan and Uttar Pradesh are now more than a fifth of their total outstanding debt. Telangana, in particular, stands out from the rest of the larger States with the highest contingent liabilities to GSDP ratio at around 9.4 per cent.

Although guarantees are not explicit debt, they have the potential to drain States' budgetary resources in the case of their invocation. Indiscriminate issuances of guarantees may also harm the banking sector as the loan sanctioning agencies might have been issuing credit only on the strength of the guarantee issued by the State without undertaking the requisite due diligence. In this context, the Reserve Bank has advised lending institutions not to sanction loans solely based on State guarantees and the loan sanctioning should be done after thoroughly examining the merit on a case-by-case basis. The fifteenth finance commission (FC-XV) had noted that 'a complete reporting mechanism of explicit and implicit guarantees is not yet in place.' In addition, it called for developing an accounting standard for financial reporting and disclosure of public debt, including contingent liabilities (FC-XV, 2020). The Centre has stipulated the States to set-off their off-budget borrowings of 2021-22 against their borrowing limits for next four years, till March 2026.

The Reserve Bank has in the past examined the implications of States' contingent liabilities/guarantees on their fiscal position. In this regard, several of the Reserve Bank's initiatives were a direct outcome of deliberations held at the Conference of State Finance Secretaries (RBI,

(Contd.)

²⁰ In Q1:2022-23 and Q2:2022-23, the RECO ratio for the Centre was 4.8 and 4.5, respectively.

Chart 1: Outstanding Guarantees of State Governments

Note: Bubble size corresponds to respective States' GSDP.

Source: State Finances: A Study of Budgets of 2021-22, RBI.

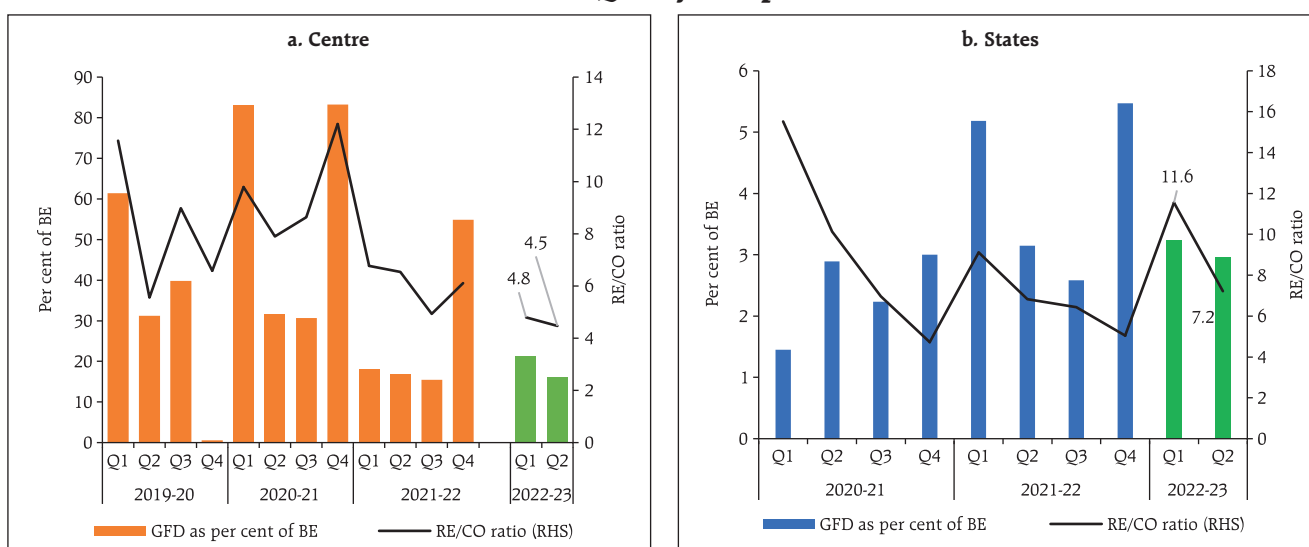
2012). Based on the recommendations of the Technical Committee on State Government Guarantees constituted by the Reserve Bank in 1997, a Guarantee Redemption Fund (GRF) was constituted in the Reserve Bank to provide a cushion to the States against the liability arising from the invocation of guarantees (RBI, 1999). However, only 18 States²¹ are currently members of the GRF scheme. For these 18 States, the GRF fund amounts to only 2.3 per cent of their total outstanding guarantees (RBI, 2021). Furthermore, the ceiling limits applied for States vary widely, with some States applying the limit as a certain percentage of total revenue receipt, or in some cases as a percentage of GSDP, and in some cases as either of the two. In contrast, for the Centre, the volume of sovereign guarantees undertaken in a financial year is currently limited to an amount not exceeding 0.5 per cent of the GDP (FRBM Act, 2003).

Without formal project assessment processes, fiscal risks from loan guarantees could rise in the medium term. A proper risk assessment framework may be enacted by the States Finance Departments to decide on the quantum of guarantees and the guarantee fee. Additionally, States may ensure that enough provisioning is maintained in their GRFs in line with the expected invocation of guarantees.

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²¹ The 18 States include Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Telangana, Tripura, Uttarakhand and West Bengal. Apart from these States, Karnataka has also recently joined the GRF Scheme.

Chart 15: Gross Fiscal Deficit and Quality of Expenditure for Centre and States

Sources: CGA; CAG; Budget documents of the Centre and States.

The expenditure quality of the States has a profound impact on medium to long-term growth of the economy necessitating a revamped push on capex in the remaining half of the year by the States (Chart 15 a and b).

b. Financing of GFD

In H1:2022-23, the Union government completed 55.4 per cent of the budgeted net market borrowings for 2022-23, which financed the major chunk of its GFD during the first half of the year. The market borrowings were followed by the utilisation of National Small Savings Fund (NSSF) for financing the GFD of the Union government. With the private sector demand for credit rising and spill over from the aggressive tightening of monetary policy by the US Fed continuing to exert hardening pressures, the 10-year g-sec yield has remained above 7 per cent during H1:2022-23. Nonetheless, the borrowing programme of the Union government during H1:2022-23 was carried out smoothly. In fact, the decision of the Union government to cut its borrowing target by ₹10,000 crore from its budgeted target for 2022-23 signals its confidence of attaining the fiscal deficit target of

6.4 per cent of GDP despite its unanticipated rise in expenditure for 2022-23 mainly accounted by higher food and fertilizer subsidies.²² This is attributable to the Centre's tax revenue that has been growing at a robust pace. Going forward, this may aid in containing the spike in 10-year g-sec yields witnessed during H1:2022-23. On the other hand, the Centre's market borrowing programme for H2:2022-23 would remain unchanged as per the issuance calendar for October 2022 - March 2023. In addition to ₹5.76 lakh crore of gross market borrowing as per the issuance calendar, the Government of India would also be issuing its novel sovereign green bonds for an aggregate amount of ₹16,000 crore (Box II).

The net market borrowings undertaken by the States during H1:2022-23 witnessed a decline in comparison to the same period in the previous

²² After taking into account the switch operations (for ₹63,648 crore) conducted on January 28, 2022, gross market borrowing for 2022-23 (BE) is ₹14.31 lakh crore and net market borrowing is ₹11.19 lakh crore. However, as per the latest issuance calendar for marketable securities (dated September 29, 2022), gross market borrowing budgeted target of the central government for the fiscal year 2022-23 was cut by ₹10,000 crore to ₹14.21 lakh crore.

Box II: Sovereign Green Bonds for A Low Carbon Economy

Fiscal policy would need to play a crucial role in mitigating climate change risks as measures that are environmentally beneficial in the long run would require substantial amount of financing. In this context, financial innovation can play a critical role in supporting such interventions. The development of green bond market has been one such financial innovation over the last 15 years (Ando *et al.*, 2022).

The Green Bonds Principles²³ set the foundations for the elements to be incorporated within a Green Bond Policy Framework - a critical document to give credibility to a green bond. These principles are entirely voluntary and should be seen as the guidelines for all green bond market participants. They also serve as the basis for many national frameworks (IFC, 2018).

Green bonds issued by the sovereign (*i.e.*, these bonds carry guarantees related to repayment of principal and payment of interest by the sovereign or the government) are termed sovereign green bonds (SGBs). The SGBs are similar to dated government securities except for the green clause. The funds raised by the sovereign through the SGBs would form part of overall government borrowing. Though green bonds have gained popularity, at the sovereign level (*i.e.*, SGBs), their market remains very shallow. Nonetheless, the issuance of SGBs is likely to expand in the coming years since many countries view green bond issuance as a vital tool for demonstrating moral leadership on climate change as well as funding commitments under the Paris Agreement which was adopted in 2015 (Ando *et al.*, 2022).

By issuing SGBs, several potential benefits arise for the sovereign. Firstly, the growing popularity of green bonds allows the sovereign to issue SGBs having longer maturity (attributable to the longer horizon of green projects) and at a low borrowing cost *vis-à-vis* vanilla sovereign bond [*i.e.*, greenium] (Ando *et al.*, 2022). Additionally, the pricing of the SGBs is not reliant on the underlying return on investment of the projects, but rather the

sovereign's risk/ rating. Secondly, since the proceeds from issuing SGBs are channelled towards green projects, the commitment to finance green projects could send signal as well as improve the reputation of the sovereign leading to higher price for the sovereign's non-green bonds (Doronzo, Siracusa, and Antonelli 2021). Thirdly, by issuing SGBs, the sovereign can reduce the cost of capital for green projects by attracting new investors who are interested in green investments (Climate Bonds Initiative, 2018). On the other hand, there are several factors which currently impede further development of the green bond market. These include narrow investor base, limited SGB issuances so far among the emerging and developing economies, absence of an international set of guidelines as to what constitute green bonds and lastly, the risk of fund mismanagement (Ando *et al.*, 2022).

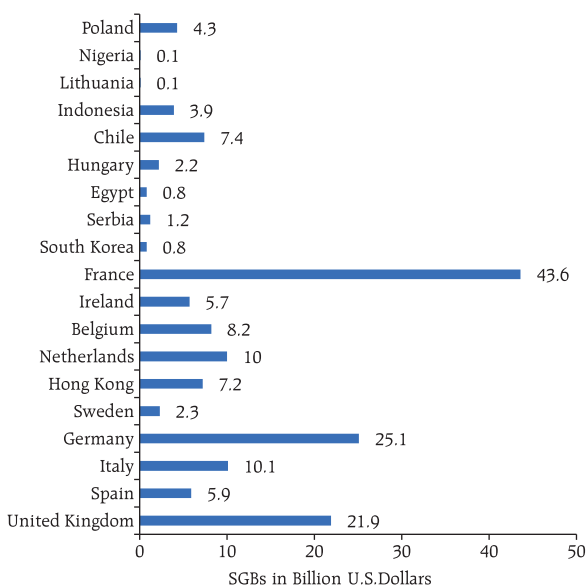
Even though the first green bond was issued in 2007 by the European Investment Bank and the green bond market has been continuously growing, SGBs issuance started much later in 2016 when Poland became the first issuer of SGBs building on the spirit of the Paris Agreement. Following Poland, France also issued SGBs in 2017. France was followed in 2017 by Fiji and Nigeria who became the first among developing economies to issue SGBs. This was followed by several advanced economies as well as emerging/ developing economies (Chart 1). So far, 24 nations have issued SGBs. However, the issuance of SGBs by these economies exhibits large variation in terms of various parameters *viz.*, issuance size, maturity, yield, tax incentivisation, value as well as the currency of issue. Nevertheless, the common objective of issuing SGBs across economies has been to finance green projects and thereby address issues such as climate change (Mosionek-Schweda & Szmelter, 2019).

Corporates have been issuing green bonds in India for a few years in a growing market; however, the country's global share is miniscule. In keeping with the ambition

(Contd.)

²³ The framework of green bond is similar to a plain vanilla bond. In general, green bond is a fixed income financial instrument sold in the market with a clause which states that the proceeds from issuing of the bond needs to be utilised for green investment. However, noticeably, there is no single global framework which needs to be followed to label a bond as 'green'. Among many of existing national and international standard frameworks used for labelling green bonds, the most popular are the Green Bonds Principles issued by the International Capital Market Association (ICMA), which was developed by a range of multilateral and investment banks, including the World Bank and the International Finance Corporation (IFC).

Chart 1: Leading Countries for Issuing SGBs by Value



Note: 1. Data is as on December 2021.

2. Statista is a German company specialising in market and consumer data.

Source: Statista Research Department, June 2022. Accessible at URL: <https://www.statista.com/statistics/1292595/leading-countries-for-sovereign-green-bonds-worldwide/>

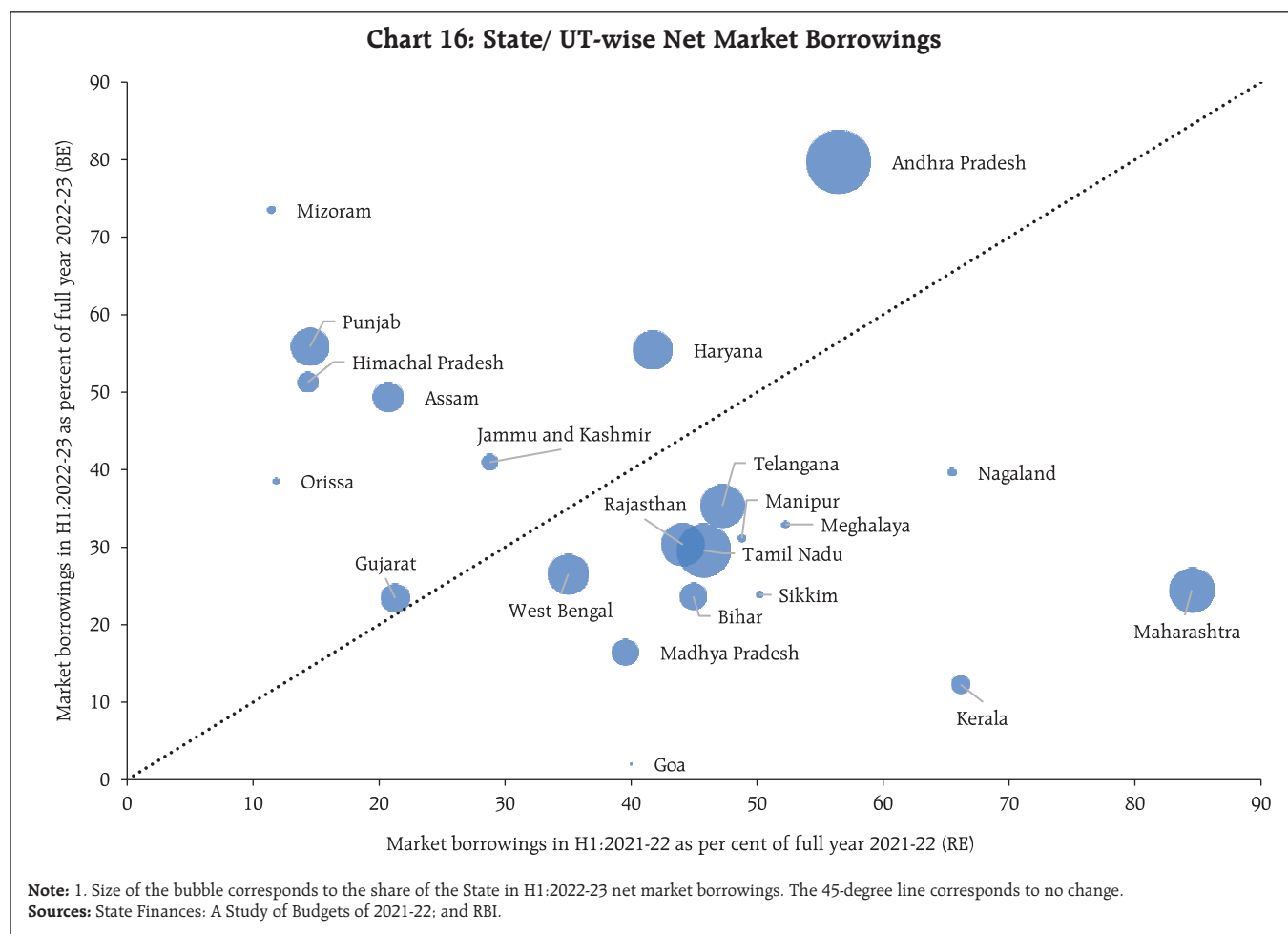
to significantly reduce the carbon intensity of the Indian economy, the Government of India (GoI) through the Union Budget 2022-23 had announced the issuance of SGBs. Currently, the framework for India's SGBs has been finalised and has been designed to comply with the four components (*viz.*, use of proceeds, project evaluation and selection, management of proceeds and reporting) and key recommendations of ICMA Green Bonds Principles. The SGBs issuance would focus on financing public projects across nine sectors which *inter alia* includes climate change, sustainable water and waste management, clean transportation, renewable energy and pollution control. The framework adopted by India has been termed 'medium green' by the Centre for International Climate and Environmental Research (CICERO), the leading global independent reviewer of green bond investment architecture. The first issuance of such SGBs by India is expected to take place in the current fiscal year. The issuance of SGBs by GoI is timely as India is taking over

the G20 presidency where it will draw attention to issues such as climate financing.

SGBs provide the sovereigns across the globe an opportunity to finance green infrastructure, demonstrate moral leadership on climate change as well as attract a new pool of domestic and international investors. Compared with its early days, the green bond market is presently witnessing rapid growth and it is recommended that sovereign nations should consider green bonds as part of their ongoing fundraising mix and integrate a program of issuances into their portfolio. The initiative adopted by India in this direction is commendable. As climate change would continue to remain a threat to economic development and life on this planet, governments need to adopt practices that build resilience in the face of a changing climate. It is estimated that trillions of dollars would be required for assisting economies in countering the climate challenge. By creating a new market for climate finance through SGBs, governments can not only safeguard from climate-change related issues but can also support their Paris Agreement commitments (IFC, 2018).

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year, supported by their lower GFD (Chart 16).²⁴ The net market borrowings by the States in H1:2022-23 accounted for only 26 per cent of their budgeted target while States had completed 40 per cent of their budgeted market borrowings in the corresponding period of the previous year. Amongst the larger States/UTs, Andhra Pradesh, Haryana, Punjab, and Jammu and Kashmir have seen a significant rise in their net market borrowings in H1:2022-23.

The financial accommodation availed by the States under various facilities provided by the Reserve

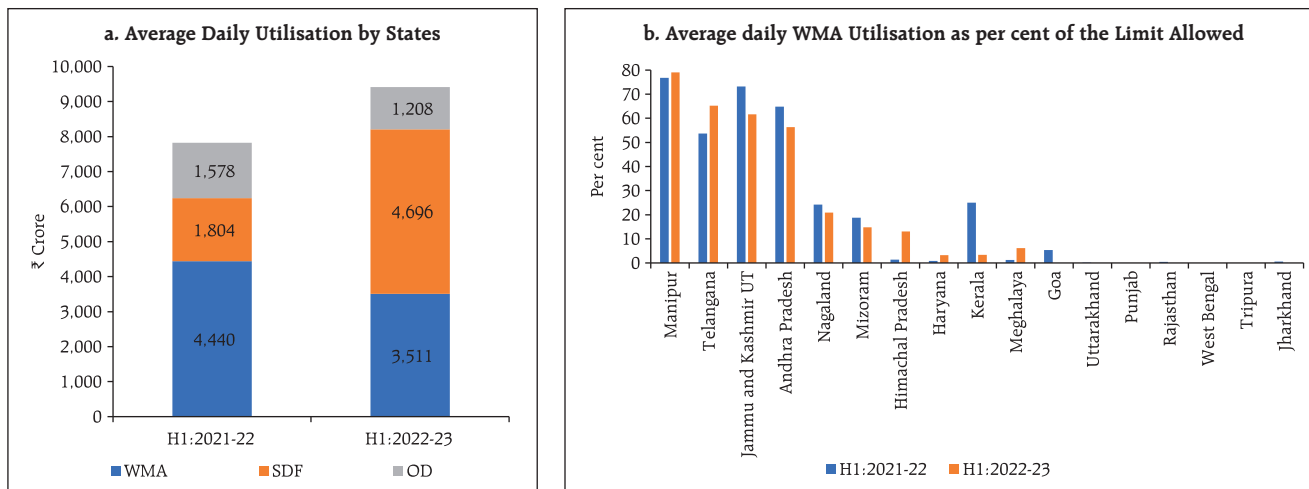
Bank increased in H1:2022-23 by 20 per cent²⁵ over the corresponding period of the previous year²⁶. The average amount availed by the States under Ways and Means Advances (WMA), and Overdraft (OD) facilities declined by 21.9 per cent and 23.4 per cent, respectively, and that under the Special Drawing Facility (SDF) increased by 160 per cent. Except Himachal Pradesh, Haryana, Manipur, Meghalaya and Telangana rest of the states have seen a decline in their daily utilisation of WMA in H1:2022-23 over the same period in the previous year (Chart 17 a and b).

²⁴ The data pertains to 30 States/ UTs.

²⁵ The data pertains to 30 States/ UTs

²⁶ Financial accommodation to the states is provided by the Reserve Bank through the Special Drawing Facility (SDF), Ways and Means Advances (WMA) and Overdraft (OD).

Chart 17: Financial Accommodation Available by the States Under Various Facilities Available with the Reserve Bank



Note: Chart b comprises only States which have availed the WMA facility in H1:2021-22 or H1:2022-23.

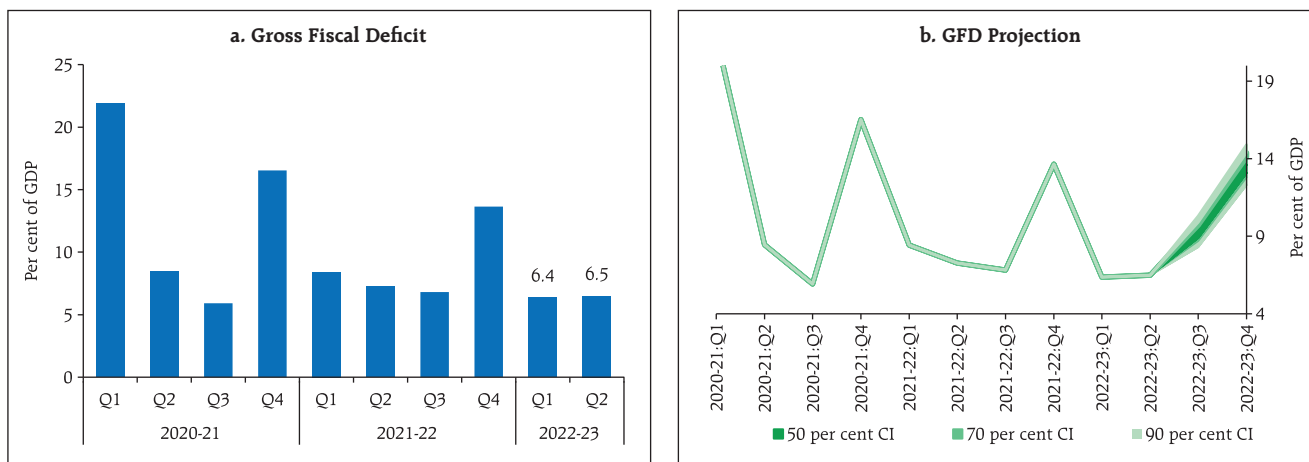
Sources: RBI Bulletin several issues; and RBI staff estimates.

IV. General Government Finances

The general government GFD for 2022-23 is budgeted to consolidate to 9.4 per cent of GDP. In continuation of the effort to provide timely fiscal data on the general government, the quarterly fiscal position of the general government has been compiled till Q2:2022-23. Improved revenue mobilisation

by the Centre and States has kept the general government GFD subdued in Q1 and Q2 of 2022-23. Going forward, while tax collections are expected to remain buoyant in H2, higher subsidy pay-outs by the Centre and a pick-up in States capex could result in a general government deficit of 9.3 per cent and 13.6 per cent of GDP in Q3 and Q4 (projected), respectively.

Chart 18: General Government Gross Fiscal Deficit: Actual and Projection



Notes: 1. The thick green shaded area represents 50 per cent confidence interval (CI) implying that there is 50 per cent probability that actual outcome will be within the range given by the thick green shaded area. Like-wise, 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.

2. The actual combined GFD-GDP ratio is for Centre plus 27 States for 2020-21 and 2021-22, and Centre plus 23 States for Q1 and Q2 of 2022-23.

Source: RBI staff estimates.

Accordingly, the general government GFD is expected to increase from 6.4 per cent of GDP in H1:2022-23 to 11.5 per cent in H2: 2022-23 (Chart 18 a and b).

V. Conclusion

To sum up, the finances of the Central government as well as the States remained resilient in H1:2022-23 with receding negative spillover effects induced by the pandemic, even as the war in Europe has led to targeted fiscal measures to contain inflation and higher allocation for food and fertiliser subsidies. The Centre recorded robust tax collections, both direct taxes and GST reflecting sustained recovery of the economy, improved tax governance and administration as well as healthier balance sheet of the corporate sector. By reiterating its target of attaining GFD below 4.5 per cent of GDP by 2025-26,

the Centre has exhibited its firm commitment to fiscal consolidation while at the same time prioritising capital expenditure to drive the recovery in growth and create a virtuous cycle to crowd in private investment. The States too have strengthened their fiscal parameters as is evident from the decline in their consolidated GFD and net market borrowings. However, the capital expenditure of the States has remained weak which is reflected in the deterioration of its expenditure quality. Going forward, the major challenge for both the Centre as well as States lie on the capex front. For the Centre, the current thrust provided for capex needs to be continued while also focussing on fiscal consolidation. For the States, it is imperative that they necessarily increase their capex due to its centrality in stimulating higher economic growth.

Appendix Tables

Table 1: Budgetary Position of the Central Government during April-September								
Item	(` thousand crore)				(Per cent)			
	Actuals		Budget Estimates		Percent of BE		Y-o-Y Growth Rate	
	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22
1	2	3	4	5	6	7	8	9
1. Revenue Receipts	1169.6	1081	2204.4	1788.4	53.1	60.4	8.2	96.3
1.1. Net Tax Revenue	1012	920.7	1934.8	1545.4	52.3	59.6	9.9	100.8
1.2. Non-Tax Revenue	157.6	160.4	269.7	243.0	58.4	66.0	-1.7	73.8
1.3. Interest Receipts	12.5	10.3	18	11.5	69.4	89.3	21.1	79.4
2. Capital Receipts	34.2	18.1	79.3	188.0	43.1	9.6	88.7	23.8
2.1. Recovery of Loans	9.6	9.0	14.3	13.0	67.2	69.3	6.6	1.7
2.2. Other Receipts	24.6	9.1	65	175.0	37.8	5.2	169.8	57.7
3. Total Receipts (1+2)	1203.7	1099.2	2283.7	1976.4	52.7	55.6	9.5	94.4
4. Revenue Expenditure	1480.7	1396.7	3194.7	2929.0	46.3	47.7	6.0	6.3
<i>of which</i>								
(i) Interest Payments	436.7	365.2	940.7	809.7	46.4	45.1	19.6	19.5
5. Capital Expenditure	342.9	229.4	750.2	554.2	45.7	41.4	49.5	38.3
<i>of which</i>								
(i) Loans and Advances	23.6	19.5	140.1	40.4	16.8	48.3	20.8	12.3
6. Total Expenditure (4+5)	1823.6	1626.0	3944.9	3483.2	46.2	46.7	12.2	9.9
7. Revenue Deficit (4-1)	311.1	315.6	990.2	1140.6	31.4	27.7	-1.4	-58.6
8. Fiscal Deficit (6-3)	619.8	526.9	1661.2	1506.8	37.3	35.0	17.7	-42.4
9. Gross Primary Deficit {8-4 (i)}	183.2	161.6	720.5	697.1	25.4	23.2	13.3	-73.4

Source: Office of the Controller General of Accounts, Ministry of Finance, Government of India.

Table 2: Quarterly Position of Central Government Finances										
Item	(₹ thousand crore)				(Per cent)					
	Q1		Q2		Per cent of BE				Y-o-Y Growth Rate	
					Q1		Q2		2022-23	
	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	Q1	Q2
1	2	3	4	5	6	7	8	9	10	11
1. Revenue Receipts	568.1	540	601.5	541.1	25.8	30.2	27.3	30.3	5.2	11.2
1.1. Net Tax Revenue	505.9	412.7	506.1	508.0	26.1	26.7	26.2	32.9	22.6	-0.4
1.2. Non-Tax Revenue	62.2	127.3	95.4	33.0	23.1	52.4	35.4	13.6	-51.2	188.9
1.3. Interest Receipts	5.1	4.7	7.4	5.6	28.1	40.5	41.3	48.9	8.3	31.7
2. Capital Receipts	28.0	7.4	6.2	10.7	35.3	3.9	7.8	5.7	278.0	-42.1
2.1. Recovery of Loans	3.4	3.4	6.2	5.6	24.0	26.2	43.2	43.1	0.5	10.3
2.2. Other Receipts	24.6	4	0.0	5.1	37.8	2.3	0.0	2.9	514.6	-99.4
3. Total Receipts	596.0	547.4	607.7	551.8	26.1	27.7	26.6	27.9	8.9	10.1
4. Revenue expenditure	772.8	710.1	707.9	686.5	24.2	24.2	22.2	23.4	8.8	3.1
of which										
(i) Interest Payments	228.6	184.3	208.1	180.9	24.3	22.8	22.1	22.3	24.0	15.0
5. Capital expenditure	175.1	111.5	167.8	117.9	23.3	20.1	22.4	21.3	57.0	42.4
of which										
(i) Loans and Advances	14.1	6.6	9.5	12.9	10.1	16.4	6.8	31.9	112.6	-26.5
6. Total Expenditure	947.9	821.6	875.7	804.4	24.0	23.6	22.2	23.1	15.4	8.9
7. Revenue Deficit (4-1)	204.8	170.2	106.4	145.5	20.7	14.9	10.7	12.8	20.4	-26.9
8. Fiscal Deficit (6-3)	351.9	274.2	268.0	252.6	21.2	18.2	16.1	16.8	28.3	6.1
9. Gross Primary Deficit {8-4 (i)}	123.3	90	59.9	71.7	17.1	12.9	8.3	10.3	37.0	-16.5

Source: Office of the Controller General of Accounts, Ministry of Finance, Government of India.

Table 3: Budgetary Position of the State Governments during April-September								
Item	<i>(₹ thousand crore)</i>				<i>(Per cent)</i>			
	Actuals		Budget Estimates		Percent of BE		Y-o-Y Growth Rate	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23
1	2	3	4	5	6	7	8	9
1. Revenue Receipts	1155.9	1460.2	3132.7	3511.9	36.9	41.6	26.3	26.3
1.1. Tax Revenue	843.0	1114.4	2144.4	2457.6	39.3	45.3	30.9	32.2
1.2. Non-Tax Revenue	82.8	109.7	257.4	298.4	32.2	36.8	47.0	32.5
1.3. Grants-in-aid and Contributions	230.2	236.2	739.3	755.9	31.1	31.2	7.1	2.6
2. Capital Receipts	4.6	3.5	21.0	19.7	22.1	17.6	103.3	-25.1
2.1. Recovery of Loans and Advances	4.5	3.4	14.4	13.7	31.5	24.6	103.6	-25.5
2.2. Other Receipts	0.1	0.1	6.6	6.0	1.5	1.5	87.1	-7.8
3. Total Receipts	1160.6	1463.7	3153.6	3531.6	36.8	41.4	26.5	26.1
4. Revenue expenditure	1306.6	1509.5	3292.8	3642.1	39.7	41.4	12.9	15.5
4.1 Interest Payments	153.7	185.7	415.3	446.9	37.0	41.5	6.2	20.8
5. Capital expenditure	183.0	195.8	633.7	721.6	28.9	27.1	73.8	7.0
5.1 Capital Outlay	168.7	172.3	580.6	662.3	29.1	26.0	77.3	2.1
6. Total Expenditure	1489.6	1705.3	3926.5	4363.7	37.9	39.1	18.0	14.5
7. Revenue Deficit (4-1)	150.7	49.3	160.1	130.2	94.1	37.9	-37.8	-67.3
8. Fiscal Deficit (6-3)	329.0	241.6	772.9	832.0	42.6	29.0	-4.6	-26.6
9. Gross Primary Deficit (8 - 4.1)	175.3	56.0	357.6	385.1	49.0	14.5	-12.5	-68.1

Note: Data pertains to 23 States.

Source: Comptroller and Auditor General of India; Budget Documents of the States.

Table 4: Quarterly Position of State Government Finances										
Item	(₹ thousand crore)				(Per cent)					
	Actuals				Per cent of BE				Y-o-Y Growth Rate	
	Q1		Q2		Q1		Q2		2022-23	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	Q1	Q2
1	2	3	4	5	6	7	8	9	10	11
1. Revenue Receipts	527.2	699.0	628.7	761.3	16.8	19.9	20.1	21.7	32.6	21.1
1.1. Tax Revenue	373.9	511.4	469.1	603.0	17.1	20.8	21.4	24.5	36.8	28.5
1.2. Non-Tax Revenue	37.6	58.6	45.1	51.1	14.9	19.6	17.9	17.1	55.9	13.3
1.3. Grants-in-aid and Contributions	115.7	128.9	114.5	107.2	15.7	17.1	15.6	14.2	11.4	-6.4
2. Capital Receipts	2.1	2.0	2.5	1.4	10.1	10.4	12	7.2	-3.3	-43.4
2.1. Recovery of Loans and Advances	2.1	2.0	2.4	1.4	14.6	14.8	16.9	9.9	-3.5	-44.4
2.2. Other Receipts	0.0	0.0	0.1	0.1	0.2	0.3	1.3	1.2	22.6	-13.8
3. Total Receipts	529.3	701.0	631.2	762.7	16.8	19.8	20	21.6	32.4	20.8
4. Revenue Expenditure	618.4	707.0	688.2	802.6	18.8	19.4	20.9	22	14.3	16.6
4.1 Interest Payments	66.2	81.7	87.6	103.9	15.9	18.3	21.1	23.3	23.4	18.6
5. Capital Expenditure	77.0	69.7	106.0	126.1	12.1	9.7	16.7	17.5	-9.5	19.0
5.1. Capital Outlay	67.9	61.2	100.8	111.1	11.7	9.2	17.4	16.8	-9.9	10.2
6. Total Expenditure	695.4	776.7	794.2	928.6	17.7	17.8	20.2	21.3	11.7	16.9
7. Revenue Deficit	91.2	8.0	59.5	41.3	57	6.2	37.2	31.7	-91.2	-30.6
8. Fiscal Deficit (6-3)	166.1	75.7	163.0	165.9	21.5	9.1	21.1	19.9	-54.4	1.8
9. Gross Primary Deficit (8 - 4.1)	99.9	-6.0	75.4	62.0	27.9	-1.6	21.1	16.1	-106.0	-17.8

Note: Data pertains to 23 States.

Source: Comptroller and Auditor General of India; Budget Documents of the States.

Measuring India's Digital Economy*

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Arham Nahar[#], Rigzen Yangdol[^],
Ishu Thakur[^]

India's ingeniously developed tech stack helped in building a resilient digital economy and attracted considerable global attention. However, lack of credible estimates on digital economy's size and employment generation hampers evidence-based policy making. This article tries to fill that void by estimating India's digital economy using input-output statistics. Major findings of the paper reveal that (i) India's core digital economy increased from 5.4 per cent of GVA in 2014 to 8.5 per cent in 2019, with digitally dependent economy hovering around 22 per cent in 2019; (ii) India's digital economy grew 2.4 times faster than the Indian economy, with strong forward linkages to non-digital sectors; (iii) digital output multiplier has increased over time, highlighting the role of investments to drive growth and (iv) 62.4 million (11.6 per cent) workers are employed in digitally dependent economy.

Introduction

The world is at the cusp of the digital revolution as digital technologies are steadfastly transforming lives and livelihoods. Digitalisation has facilitated a faster recovery of economic activity from the pandemic and

will remain crucial for countries to build resilience in the future. G20 Digital Economy Development and Cooperation Initiative (2016), acknowledged digitalisation as a driver of global inclusive economic growth, enhancing productivity of existing industries. Moreover, pro-active policy support for faster adoption of frontier technologies¹ is gaining momentum to fast pace the growth process.

The term Digital Economy, first coined in the 1990s has expanded in consonance with the rapidly changing nature of technology to include a wider connotation of digital technologies, products and services across a wide spectrum of sectors. Its multidimensional nature has brought serious definitional challenges among academicians, compilers and policymakers. However, a consensus is gradually emerging but the lack of official statistics limits credibility. A narrow view restricts the digital economy to online platforms and the activities enabled by them, whereas a broad view encompasses all activities that use digitised data as a part of the digital economy (IMF, 2018). Joint collaborative research by Huawei and Oxford Economics pegged the size of the global digital economy to be around USD 11 trillion i.e., 15.5 per cent of global gross domestic product (GDP), which is expected to reach USD 23 trillion (24.3 per cent of global GDP) by 2025.

As the impact of digital goods and services on a country's economic growth seems to be growing, particularly after the pandemic shock, it is important to develop a robust framework, especially for a country like India, where the digital economy is steadily penetrating all sectors of the economy.

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¹ According to UNCTAD (2021), there exists 13 frontier technologies such as robotics, artificial intelligence (AI), 5G, biotechnology and nanotechnology, 3D printing, drones etc. Total market size of frontier technologies is estimated to rise to US\$3.2 trillion by 2025 from US\$ 350 billion in 2020.

The explosive growth of technological enablers in India over the last decade, including telecom and smartphone penetration, fast and low-cost internet services, technology-facilitated access to credit, and efficient and inclusive payment systems, make it pivotal to understand the evolution of digitalisation relative to the overall economy and its impact on economic activity and employment. Credible estimates of India's digital economy would be crucial for evidence-based policymaking. Identification of backward and forward linkages of digital sector with non-digital sector, and estimating the multiplier effect of digital sector *vis-à-vis* non digital sector will aid proactive policymaking in the quest for leapfrogging convergence. A better understanding of digitalisation's effect on the economy will assist analysis of evolution of technological progress, future growth, international trade, inflation dynamics, and transmission of shocks. Further, leveraging digital technologies becomes crucial to achieve the vision of becoming a developed economy by 2047.

Against this background, the motivation of the article is threefold, (i) to measure the size of India's digital economy using Input-Output tables; (ii) provide multipliers estimates for digital and non-digital economy; and (iii) provide estimates on the employment generation by the digital economy. The article is organised into five sections. Section II presents a review of relevant literature on various measurement aspects related to the digital economy. Section III covers the research methodology. Empirical findings are discussed in section IV and section V concludes the article with some policy suggestions.

II. Literature Review

OECD (2020) developed a comprehensive approach to estimate the share of the digital economy using exposure to Information and Communication Technology (ICT) sector based on relevant International Standard Industrial Classification (ISIC). The Bureau of Economic Analysis (BEA) used input-output tables

(IOTs) to estimate the digital economy's contribution to USA's GDP (1997). Kumar and Ghosh (2019) estimated the size of India's digital economy based on the ICT sector using National Industrial Classification to be around 6.7 per cent of India's economy during 2011-12 to 2017-18. Dynan & Sheiner (2018), while defining GDP as a close measure of welfare, concede its failure to capture welfare as well as the digital economy. The core problem identified was the inability to capture goods available at zero or negligible marginal cost in the national accounts, with huge overall productivity and welfare gains associated with their consumption. Brynjolfsson *et al.* (2019) developed a new metric 'GDP-B' to quantify the value of goods and services provided free of cost by estimating values of willingness to accept for giving up access to goods or services concluding that annual GDP growth rates were higher by 0.05 to 0.11 percentage points per year from 2004.

Supply-use tables have been utilised to estimate the digital economy by Ahmad and Ribarsky (2018), Barefoot *et al.* (2018). Mitchell (2018) proposed a standard framework using digital supply-use tables (SUTs) to estimate a comprehensive digital satellite account. Moulton *et al.* (2022) present estimates of digital industries for five economies using SUTs to conclude that the gross value added of digital industries ranges from 4.4 to 10.2 per cent of total GVA. In a more recent attempt to define and measure the digital economy, Asian Development Bank (ADB) proposed a comprehensive framework principally sourced from the national SUTs and IOTs (ADB, 2021). The estimated share of digital economy for 16 economies was found in the range of 2 to 9 per cent of the total GDP for the period 2004 to 2019. Using multi-regional IOTs, the global digital economy is estimated at 8.8 per cent of global GDP. ADB's approach is considered appropriate for this study as it is practical and statistically informative with the use of secondary data sources.

III. Data and Methodology

III.1 Definition of Digital Economy

OECD describes Digital Economy as an "association of tiers incorporating complementary and mutually dependent elements and perspectives of digitisation in the economy". It proposes five tiers underpinning the various proposed definitions of the digital economy (Table 1).

ADB (2021) defined digital economy as **the contribution of economic transactions that involve both digital products and digital industries to Gross Domestic Product (or Gross Value Added, GVA). Digital products are the goods and services that primarily generate, process, and/or store digitised data.** Digital industries are producers that primarily produce such products. The framework identifies core digital products which are classified under the following five product groups: (a) hardware, (b) software publishing, (c) web publishing, (d) telecommunications services, and (e) specialised and support services. Digital products and industries are identified from international industry and product classification systems – the International Standard Industrial Classification System (ISIC Rev. 4) and the Central Product Classification System (CPC 2.1), which are used to construct official economic statistics (Annexure 1: Tables A1.2 and A1.3). Components and accessories that support digital goods and services and

may be important inputs into production, referred to as "digitally enabling products" are not considered to be core digital products but are captured through backward linkages in the core digital economy. Similarly, products that utilise digital products as inputs, "Digitally enabled products" are not considered to be a part of the core digital economy.

III.2 Measurement of Digital Economy

This article uses the approach followed by ADB using national IOTs to measure the size of the digital economy. The method is grounded in input-output analysis using Leontief coefficients, and linkages to capture sector dependencies (Chart 1). Derivation of the digital GVA is discussed in Annexure 1. GVA (at basic prices) attributable to the digital economy is calculated using the following equation:

$$GVA_{\text{digital}} = i^T \hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}} \varepsilon_1 + i^T (\hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}})^T \varepsilon_1 - [\text{diag}(\hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}})]^T \varepsilon_1$$

The first term, $i^T \hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}} \varepsilon_1$, calculates the backward linkage of the digital industry, the second term, $i^T (\hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}})^T \varepsilon_1$ yields the forward linkage. Diagonal entry in the $\hat{v} B \hat{y}$ matrix, $[\text{diag}(\hat{v}_{\text{agg}} B_{\text{agg}} \hat{y}_{\text{agg}})]^T \varepsilon_1$ accounts for a double-counted

Table 1: Tiers of Digital Economy

1	Core Measure	Economic activity from ICT goods and digital services producers
2	Narrow Measure	Core measure + economic activity from firms reliant on digital inputs
3	Broad Measure	Narrow measure + economic activity from firms significantly enhanced by the utilisation of digital inputs
4	Digital Society	Broad measure + digitalised interactions and activities, e.g. use of digital platforms
5	Digitally ordered and/or delivered	Ordering and delivering methods of digital economy

Source: Report for the G20 Digital Task Force (OECD).

Chart 1: Digital Economy Measurement Framework

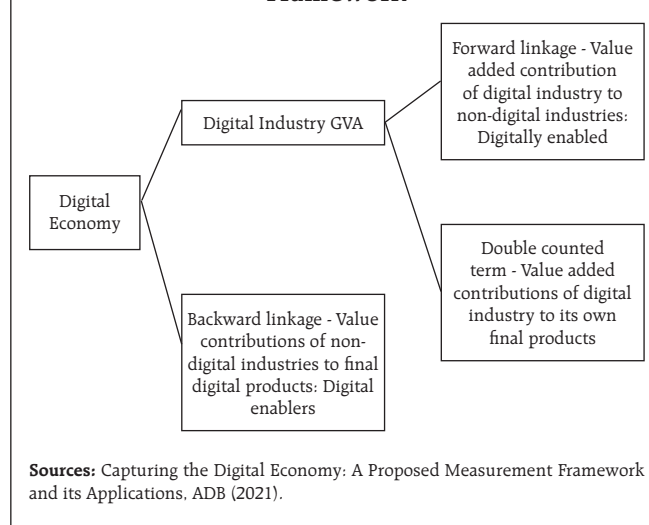


Table 2: Two Industry Economy

Industry	I	II	Final Demand	Gross Output
I	z_{11}	z_{12}	f_1	x_1
II	z_{21}	z_{22}	f_2	x_2
GVA	gva_1	gva_2		
Gross Output	x_1	x_2		

term, which is subtracted from GVA_{digital} . ε_1 is an "eliminator vector" used to mathematically eliminate entries that need not be included in calculations.

Based on the level of industry disaggregation presented in the IOT (refer Annexure 1), industry and product classification needs to be evaluated to disaggregate the data. For example, suppose there is a 2 x 2 IOT (Table 2). Industry I is supposed to be a partially digital sector (with both digital and non-digital subsectors). This industry needs to be disaggregated into two sub-industries. Following ADB (2021), a disaggregation ratio is calculated using a ratio of digital activity (estimated) to the activity of the aggregate industry. The disaggregation ratio is calculated as the proportion of estimated digital activity from the aggregate industry activity. This ratio is calculated by estimating the revenue shares of the sub-industries. The revenue shares are multiplied to values in both columns and rows corresponding to the aggregate industry in the IOT.

In the example, let α be the share of digital industry Ia to Industry I's total revenue, and β be the share of non-digital Industry Ib to Industry I's total revenue, $\alpha + \beta = 1$, a disaggregated 3 X 3 IOT is obtained (Table 3).

Table 3: Two Industry Economy with partially digital sectors

Industry	Ia	Ib	II	Final Demand	Gross Output
Ia	αz_{11}	$\alpha \beta z_{11}$	αz_{12}	αf_1	αx_1
Ib	$\beta \alpha z_{11}$	$\beta \beta z_{11}$	βz_{12}	βf_1	βx_1
II	αz_{21}	βz_{21}	z_{22}	f_2	x_2
GVA	αgva_1	βgva_1	gva_2		
Gross Output	αx_1	βx_1	x_2		

III.3 Employment in the Digital Economy

Employment in the core digital sector and employment in the broader spectrum of digitally enabled sectors comprise employment in the digital economy (ADB 2016, UNCTAD 2019b; OECD 2016).

III.4 Data

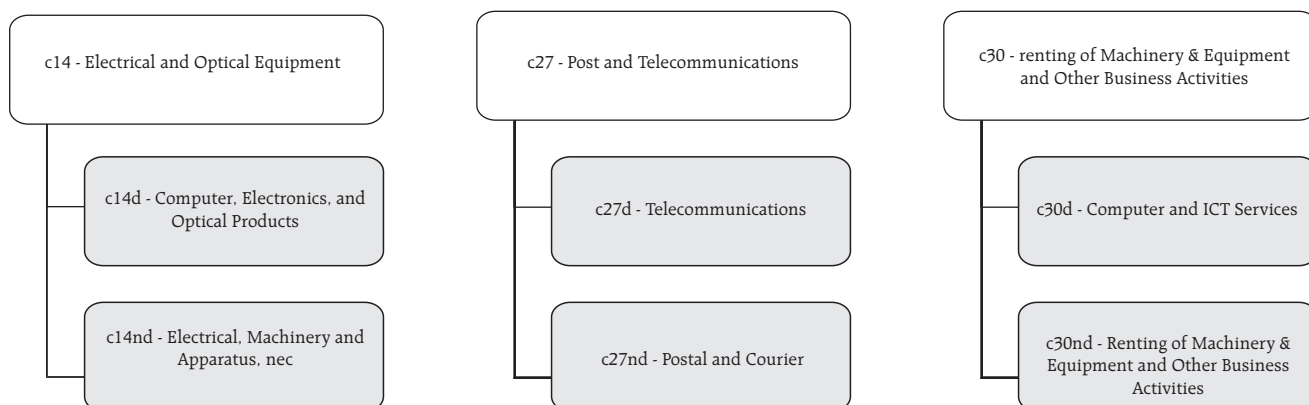
The study uses India's National Input Output Table (NIOT) for the years 2014 and 2019 taken from the Asian Development Bank. The NIOT is a 35 X 35 sector IOT (Annexure 1 and Table A1.1). Partially digital sectors are identified following the definition of the digital products and industries introduced earlier. Revenue shares are derived using Net sales of companies on ProwessIQ published by the Centre for Monitoring Indian Economy (CMIE) and total output of manufacturing units in the Annual Survey of Industries (ASI) published by the Ministry of Statistics and Programme Implementation (MoSPI). For the computation of employment in the digital economy, PREDICT database 2022 for India is also used. Digital sector employment is defined as employment in the ICT sectors (Mas, *et al.*, 2018). Further, core digital sector employment is defined as employment in ICT sectors, while employment in digitally enabled sectors comprises media content and retail sales. Further, shares of distribution of the workforce in the Periodic Labour Force Survey (PLFS) 2019-20 (MOSPI) were used to estimate employment in the digital economy as defined in the ADB framework (ADB, 2021).

IV. Empirical Findings

Following ADB's (2021) framework, the following NIOT sectors were identified as digital sectors (Chart 2). The sectors are split into two sub-sectors to segregate the digital subsectors. This would give us a 38-sector NIOT for India for the years 2014 and 2019.

IV.1 Digital Economy Estimates

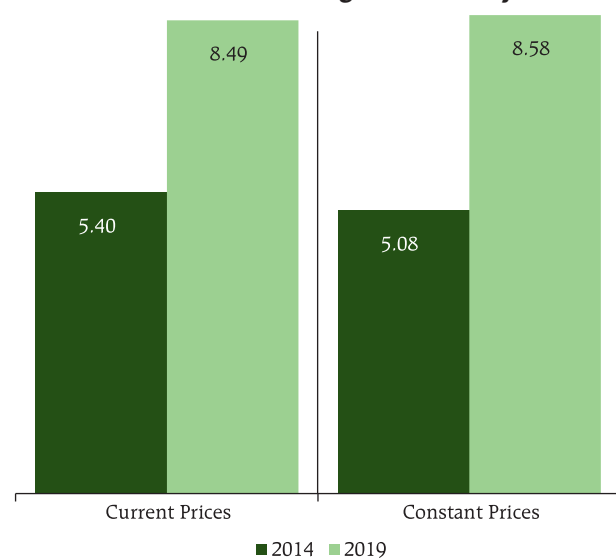
The equation above summarises the methodology of the framework and is applied to the Indian

Chart 2: Segregation of Digital Subsectors

Sources: Capturing the Digital Economy: A Proposed Measurement Framework and Its Applications, ADB (2021).

economy's IO tables to obtain digital economy estimates for India. GVA(digital) as a percentage of total GVA has been estimated for the years 2014 and 2019 at both current and constant prices. In terms of current prices, the size of the digital economy as a percentage of GVA has increased from **5.40 per cent in 2014 to 8.49 per cent in 2019** (Chart 3).

In absolute terms, the size of the digital economy has grown from US\$ 107.7 billion in 2014 to US\$ 222.5 billion in 2019 (Table 4).

Chart 3: Size of the Digital economy (%)

Sources: Authors' calculations based on Input-Output framework.

In absolute US dollar terms, India's digital economy exhibited a growth rate (compounded annually, CAGR) of 15.62 per cent between 2014 and 2019, while India's economy (GVA) grew annually at a compound rate of 6.59 per cent (as per ADB's IO tables). This shows that India's digital economy grew 2.4 times faster than the Indian economy itself. The CAGR of digital GVA as a percentage of GVA is a normalised measure of annual growth. India posted a growth rate of 9.47 per cent. This again suggests that the digital economy GVA for India grew at a rate faster than the economy-wide GVA between 2014 and 2019 (Chart 4).

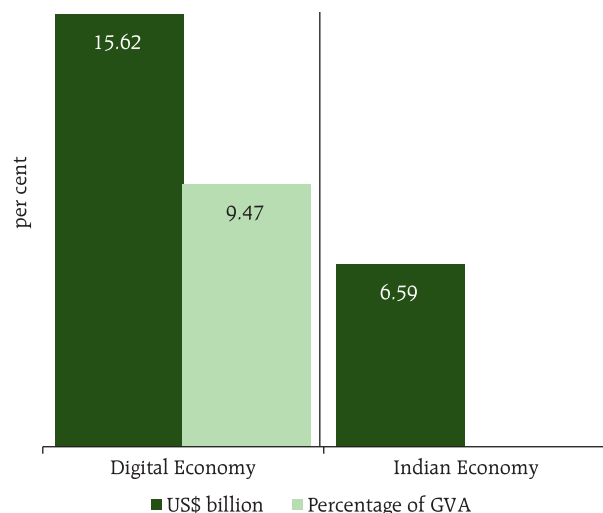
IV.1.1 Digital Economy as a Supplier and User of Goods and Services

To understand the role of the digital economy as a supplier and a user of goods and services, an analysis of linkages (forward and backward) is undertaken. Chart 5 disaggregates the three terms that constitute the core digital economy for 2014 and 2019.

Table 4: Size of the Digital Economy

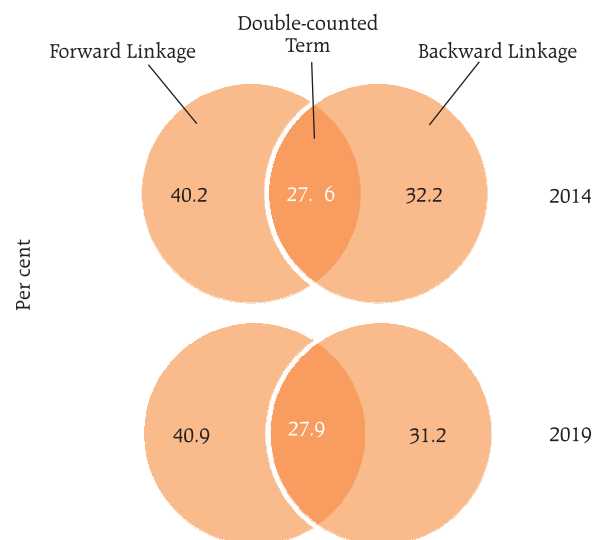
Year	Size (US\$ bn)	Share (%)
2014	107.7	5.40
2019	222.5	8.49

Source: Authors' calculations based on Input-Output framework.

Chart 4: Compound Annual Growth Rates (2014-2019)

Sources: World Bank; Authors' calculations based on Input-Output framework.

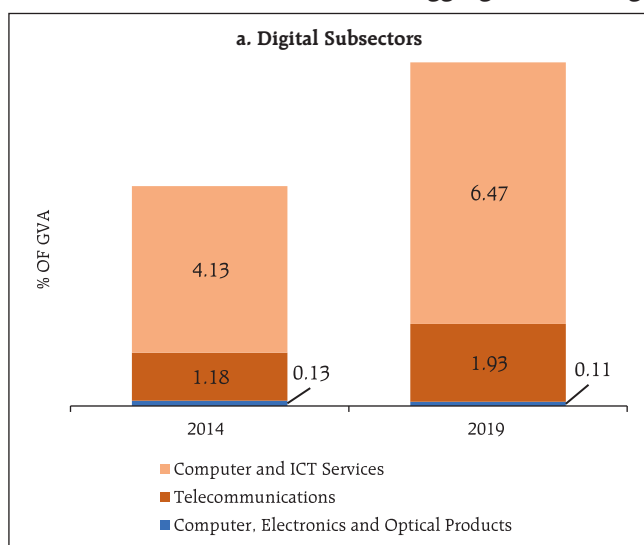
As the chart shows, a major proportion of the digital GVA for India is attributed to forward linkages, implying that the digital economy majorly acts as a supplier of value-added to the non-digital sectors. The digital sector contributes around 28 per cent of its own value added (the double-counted term).

Chart 5: Disaggregation of Digital Economy

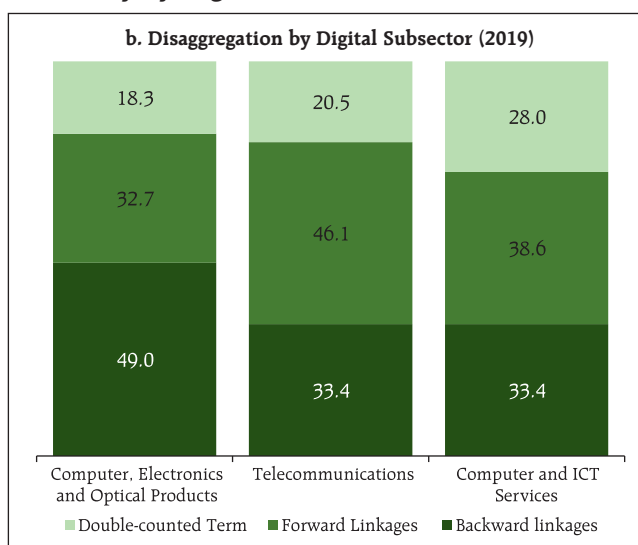
Sources: Authors' calculations based on Input-Output framework.

IV.1.2 Digital Subsectors

Following the definitions, the digital economy is comprised of three subsectors – (i) computer, electronics, and optical products; (ii) telecommunications; (iii) computer and ICT services (Chart 6).

Chart 6: Disaggregation of Digital Economy by Digital Subsector

Sources: Authors' calculations based on Input-Output framework.



The computer and ICT services sector constitutes a substantial share of India's digital economy, followed by the telecommunications subsector (Chart 6a). The hardware industry of computer, electronics, and optical products contributes to only 0.1 per cent of India's GVA. Both computer and ICT services and Telecommunications have a major proportion of the sectors' GVA attributed to forward linkages, as they take supply-side roles in the economy. On the other hand, the hardware sector has a greater fraction of its GVA contributed by backward linkages, acting as a utiliser of value-added from non-digital sectors

(Chart 6b). This explains why the digital economy of India takes a supply-side role, where the forward linkages of the digital economy are greater than the backward linkages.

IV.1.3 Digitally Enabled Sectors

The industries with the highest forward linkages from the aggregate core digital economy in 2019 are construction, renting of machinery and equipment, food beverages and tobacco, textiles and textile products, and electrical and optical equipment (Chart 7).

Chart 7: Digitally Enabled Sectors

Sector	2014	2019
Construction	5.4	6.1
Renting of M&Equip and other business activities	2.2	4.2
Food, beverages, and tobacco	3.2	3.8
Textiles and textile products	3.3	3.6
Electrical and optical equipment	3.6	3.5
Transport equipment	3.5	2.9
Financial intermediation	1.3	2.6
Retail trade, except of motor vehicles and motorcycles; repair of household goods	1.3	2.2
Other community, social, and personal services	1.2	2.2
Education	0.5	2.0
Machinery, not elsewhere classified (n.e.c.)	2.0	1.9
Manufacturing, n.e.c.; recycling	2.9	1.8
Real estate activities	1.0	1.7
Chemicals and chemical products	1.3	1.7
Air transport	0.2	1.5
Wholesale trade and commission trade, except of motor vehicles and motorcycles	0.8	1.4
Other supporting and auxiliary transport activities; activities of travel agencies	0.4	1.3
Basic metals and fabricated metal	1.7	1.2
Health and social work	0.8	1.2
Inland transport	4.7	1.0
Agriculture, hunting, forestry, and fishing	0.7	0.9
Coke, refined petroleum, and nuclear fuel	0.5	0.9
Rubber and plastics	0.5	0.5
Pulp, paper, paper products, printing, and publishing	0.5	0.4
Hotels and restaurants	0.8	0.4
Electricity, gas and water supply	0.3	0.4
Mining and quarrying	0.1	0.3
Leather, leather products and footwear	0.3	0.3
Other nonmetallic minerals	0.2	0.2
Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel	0.1	0.2
Wood and products of wood	0.2	0.2
Water transport	0.1	0.2
Postal and Courier	0.0	0.1

Source: Authors' calculations based on Input-Output framework.

IV.1.4 Digitally Disrupted Sectors

Prominent digital innovations that challenge the existence of dominant firms and have systemic effects in industries and markets are referred to as *digital disruption* (Skog *et al.*, 2018). The Advisory Expert Group on National Accounts (2019)² identifies 10 sectors that are getting digitally disrupted. Digital disruption alters a sector's landscape, changing how businesses operate traditionally. The disruptions force industries to adapt or risk becoming irrelevant, acting as a major cause of fundamental creative destruction (Table 5).

To obtain an estimate of the digitally dependent economy, ADB's (2021) framework is applied to the identified digital sectors and digitally disrupted sectors (assumed to be 100 per cent digitally disrupted). Around 22.4 per cent of the Indian economy was digitally dependent in 2019 (around US\$ 0.6 trillion) (Chart 8).

IV.1.5 Digital Multiplier Analysis

In this section, the role of the core digital sector is examined from the demand-side perspective. Multipliers help in comprehending the impact of a unit change in the final demand (exogenous demand shock) for digital sector output on the gross output or value-added of an economy.

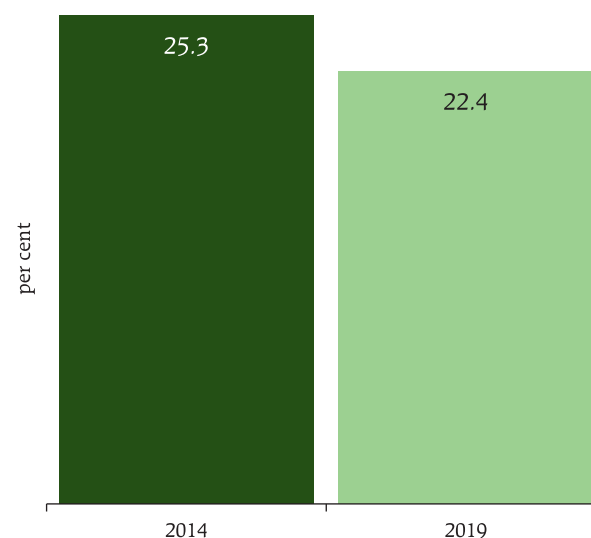
Table 5: Digitally Disrupted Sectors

Code	Description
49	Land transport services and transport services via pipelines
55	Accommodation services
56	Food and Beverage serving services
58	Publishing services
59	Motion picture, video, and television programme production services, sound recording and music publishing
K	Financial and insurance services
73	Advertising and market research services
79	Travel agency, tour operator, and other reservation services
P	Education services
92	Gambling and betting services

Sources: The Advisory Expert Group on National Accounts (2019), ADB (2021).

² <https://unstats.un.org/unsd/nationalaccount/aeg/2019/M13.asp>

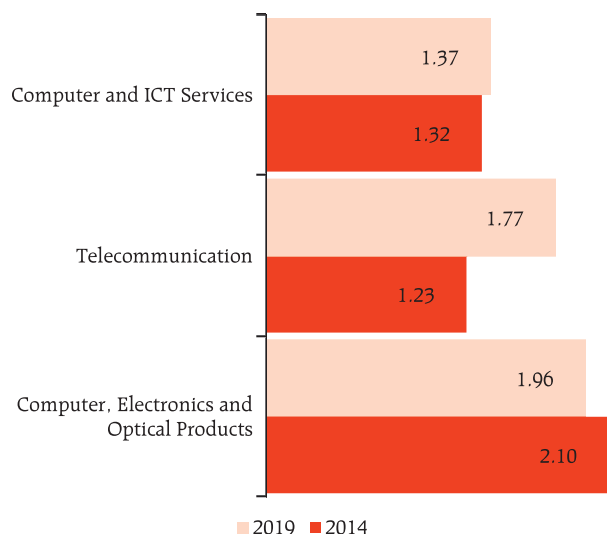
Chart 8: Degree of Digital Dependence



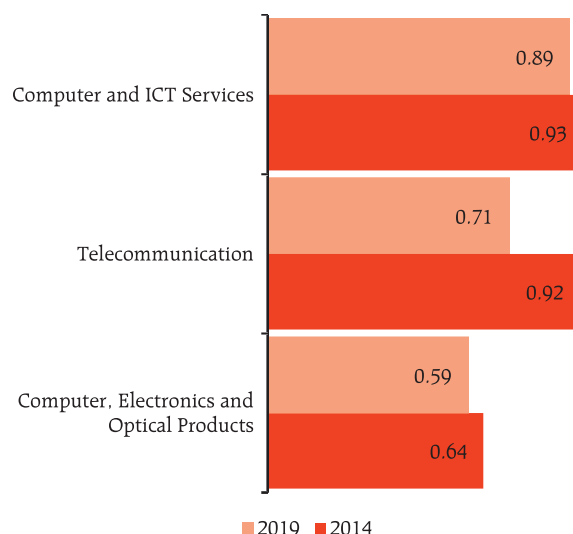
Sources: Authors' calculations based on Input-Output framework.

A simple output multiplier shows the direct and indirect impact of a unit change in final demand on the economy's total output. We compare the output multiplier for digital and non-digital sectors, to compare the effect of an increase in final demand for these sectors. The manufacturing of computers, electronics, and optical products was found to have a lower output multiplier for 2019 as compared to 2014, indicating an increase in dependence on imported inputs (external economy). The output multiplier value of 1.96 means that a US\$ 1 increase in demand for computer products leads to around double the value increase in gross output of the sector. The telecommunications and ICT services sectors saw an increase in domestic output multipliers. An increase of US\$ 1 in demand for telecom services leads to a US\$ 1.77 increase in gross output. Computer and ICT services generated an output multiplier of 1.37 per US\$ 1 increase in demand (Chart 9).

The value-added multiplier captures the value created in an economy, which is the net of gross output and intermediate consumption, caused by a unit change in final demand. Lower value-added multipliers for the digital sectors in 2019 show higher

Chart 9: Digital Sector Output Multiplier

Sources: Authors' calculations based on Input-Output framework.

Chart 10: Digital Sector Value-Added Multiplier

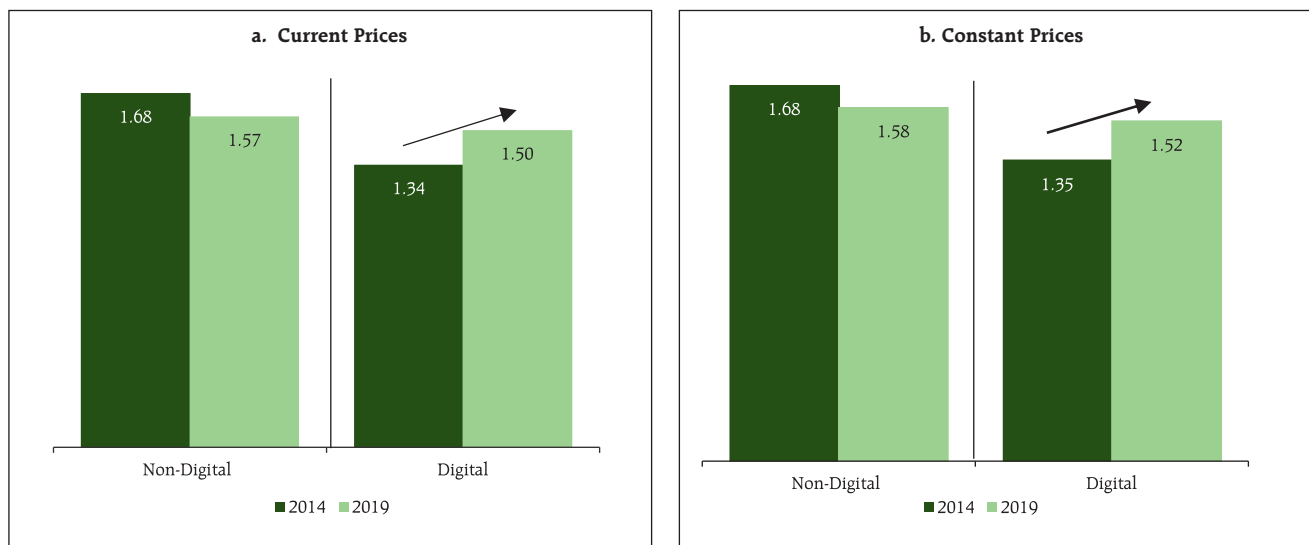
Sources: Authors' calculations based on Input-Output framework.

vertical integration of the domestic sector to foreign sectors (ADB, 2021) (Chart 10).

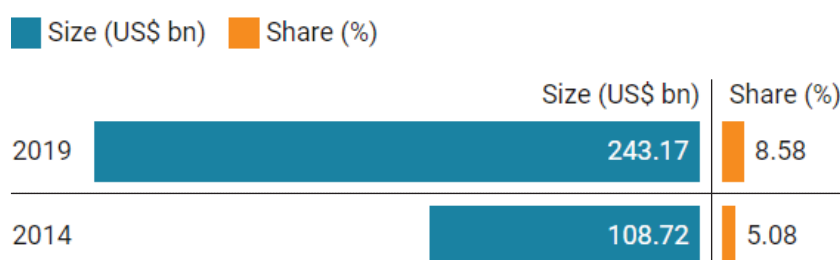
IV.1.6 Digital and Non-Digital Output Multipliers

Next, we compare the digital output multiplier against the non-digital output multiplier for both periods to explore the digital sector's importance in output growth. It is observed that the output

multiplier (for constant price IOT) for the digital sector has increased over the period under consideration from 1.35 to 1.52, as opposed to that of non-digital sector. This indicates that a US\$1 increase in final demand for digital sectors would lead to an increase of US\$1.5 increase in the output of this sector in 2019 (Chart 11).

Chart 11: Digital and Non-Digital Output Multipliers

Sources: Authors' calculations based on Input-Output framework.

Chart 12: Digital Economy in Constant Prices

Sources: Authors' calculations based on Input-Output framework.

IV.1.7 Digital Economy Estimates at Constant Prices

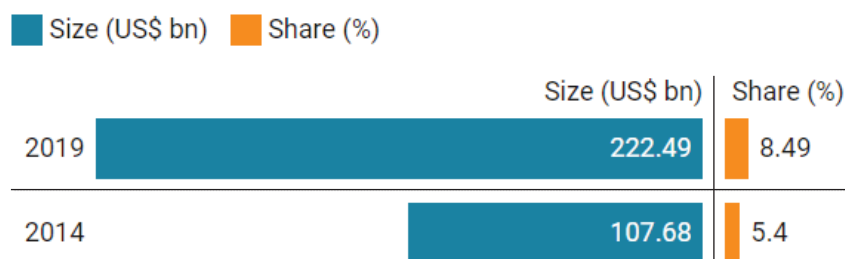
Input-output analyses are generally conducted using tables based on current prices, as the application of the model is static (lack of time dimension). Thus, there is less concern about price changes as compared to other considerations like an aggregation of sectors or products, representativeness, the scope of analysis, etc. Further, constructing constant-price tables becomes unfeasible because of the requirement for data on price indices, rebalancing, etc. As against the previous analysis conducted using India's IOT in current prices, this section explores the 'real' change in levels and trends, *i.e.*, volume changes, to remove the price effects from IOTs.

From a dynamic perspective, the size of India's digital GVA as a percentage of economy-wide GVA

has increased from 5.08 per cent in 2014 to 8.58 per cent in 2019, with a compound annual growth rate of 17.47 per cent, in contrast with 15.62 per cent CAGR in value terms. This difference can be attributed to a fall in prices and productivity growth within digital sectors (Charts 12 and 13).

IV.2 Employment in the Digital Economy

Attempts to estimate employment in the IT sector are often used as a proxy for employment in the digital sector. As per Invest India, the information technology/business process management (IT-BPM) sector is estimated to contribute to 4.8 million full-time employees in FY2022, increasing by 7.5 per cent from 4.4 million in FY2021. Including indirect jobs created by the sector, total employment was estimated at 8 million (TeamLease, 2021). Naukri JobSpeak Index

Chart 13: Digital Economy in Current Prices

Sources: Authors' calculations based on Input-Output framework.

which tracks monthly job listings in the organised corporate sector³ recorded a five-fold increase in job postings in the IT Software Services from the baseline index of July 2008. As per NASSCOM, the total technology industry workforce is projected to cross 5 million in FY 2022, with 1 in 3 workers being digitally skilled. Digital platforms have facilitated the creation of a 'gig economy' that provides the benefits of novel and flexible employment but comes with an overriding concern of uncertain terms of employment. NITI Aayog (2022) estimated 6.8 million gig workers⁴ in 2019-20, up from 2.5 million in 2011-12, and projected 7.7 million gig workers in 2020-21, constituting about 1.3 per cent of the total workers. The digital economy could generate around 60-65 million employment opportunities by 2025, with substantial redeployment (MEITY, 2019).

Using PREDICT Database: The core digital sector identified by the European Commission's Prospective Insights on R&D and ICT (PREDICT) 2022 database (Table 6) was estimated to employ about 7.5 million people in India, in 2019. Including the digitally enabled media content MC sector, the total employed increased to 7.8 million. The ICT sector employment has nearly doubled in the last decade, increasing from 4.0 million in 2009 (2009–2019 CAGR of 5.75%). A ten-year comparison reveals employment to have increased by 78.7 per cent in the core digital sector and by 16.3 per cent in the digitally enabled MC sector (Chart 14).

³ The report excludes gig employment, hyperlocal hiring, or campus placement.

⁴ A gig worker engages in income-earning activities outside traditional employer-employee relationship and in the informal sector (Ministry of Labour and Employment, 2020a). Gig workers can be classified into platform and non-platform-based workers. Non-platform gig workers are generally casual wage workers and own-account workers in the conventional sectors, working part-time or full time. When gig workers use platforms – i.e., websites or apps like Ola, Uber, Zomato, Urban Company to connect with customers, they are called platform workers (OECD, 2019).

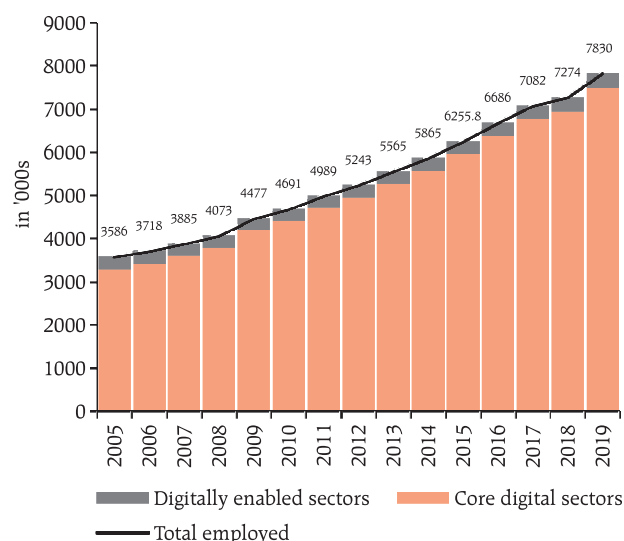
Table 6: List of NACE Rev. 2 ICT sub-sectors.
Operational Definition

NACE Rev.2	Description
261-264, 582,61,62,631,951	ICT total (operational)
261-264	ICT Manufacturing industries (operational)
261	Manufacture of electronic components and boards
262	Manufacture of computers and peripheral equipment
263	Manufacture of communication equipment
264	Manufacture of consumer electronics
582, 61, 62, 631, 951	ICT Service industries
61	Telecommunications
582, 62, 631, 951	Computer and related activities

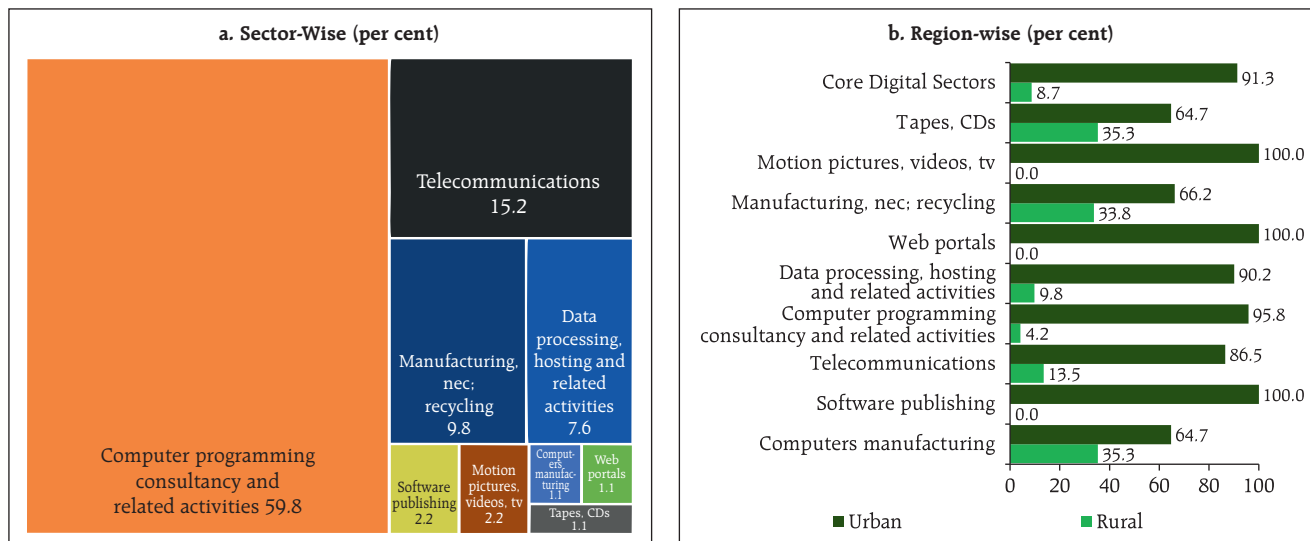
Source: (Mas, et al., 2018).

Based on the ADB framework, PLFS share distribution of the workforce was used to capture employment in the digital economy (ADB, 2021). The five main product groupings identified provide a lower bound of estimation of employment in the digital sector. The core digital sector accounted for 0.92 per cent of total employed workers in 2019-20

Chart 14: Employment in the Digital Economy



Sources: Author's calculations based on PREDICT database.

Chart 15: Employment Distribution in Digital Sector

Sources: PLFS 2019-20; Authors' calculations.

(Annexure 2). Using the current population of India⁵ as on May 26, 2022, and the worker population ratio in 2019-20 as per PLFS (at 38.2 per cent), the total employed in the core digital economy (0.92 per cent) was estimated at 4.9 million people. Within the six digital sectors⁶, the highest share of employment was recorded in divisions of Computer Programming, Consultancy and Related Activities (59.8 per cent), followed by Telecommunication (15.2 per cent) (Chart 15).

Regional analysis reveals core digital sector employment to be concentrated in urban areas, which accounts for 91.3 per cent of total employment. Production in activities of manufacture of computers, production of tapes and CDs and other manufacturing n.e.c.⁷, have a significant rural presence, while web portals and motion pictures activities have nil employment in the rural sector (Chart 15a). By gender,

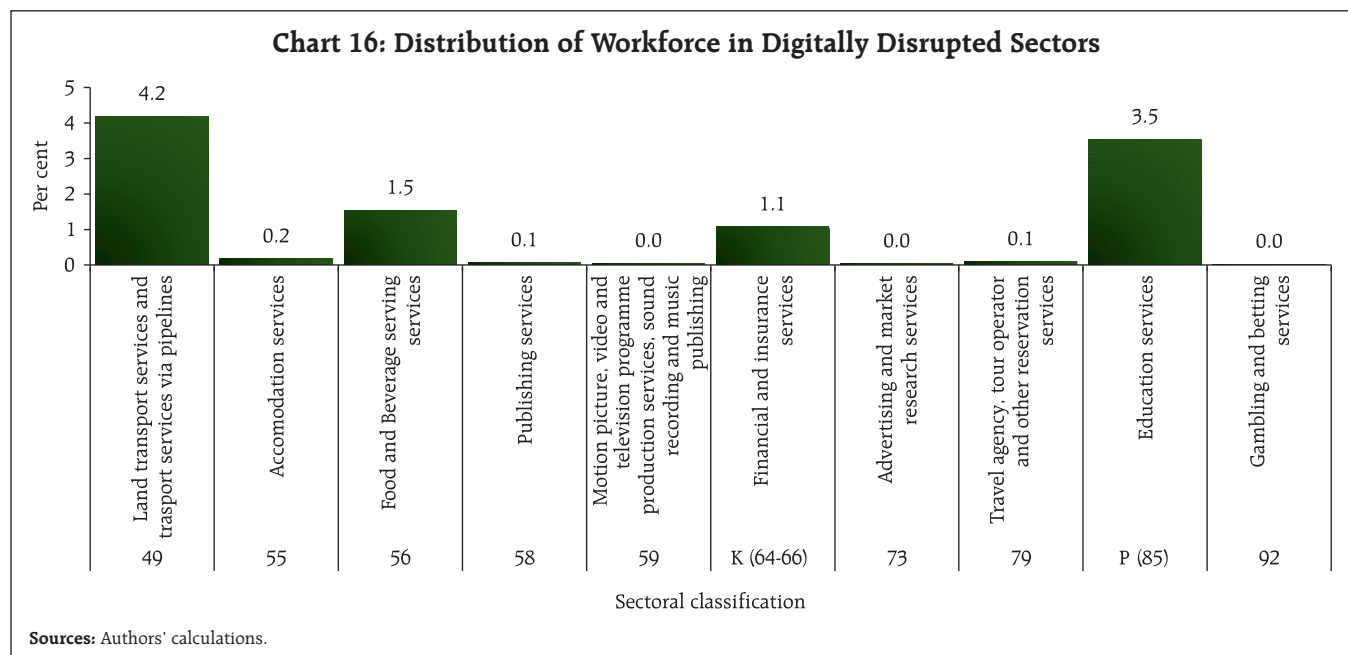
male workers make up about 73.4 per cent of total employed in the core digital sector. Sub-sectoral activity in manufacturing n.e.c. and software publishing have a higher gender parity in work participation (Chart 15b).

The Advisory Expert Group on National Accounts (2019) classification of 10 increasingly digitally disrupted sectors, account for 10.7 per cent of the total workforce employed in the economy, implying one-tenth of the workforce is in digitally disrupted sectors, with land transport services, transport services via pipelines and education services having the highest distribution of workforce (Chart 16). Including the employed in core digital sectors, about **11.6 per cent** of the total workforce is involved in the overall digital economy. Using current population estimates, these workers are estimated at **62.4 million**.

⁵ <https://www.worldometers.info/world-population/india-population/>

⁶ Mapped using MRIO classification to ISIC 4-digit

⁷ Not elsewhere classified



V. Conclusion

This article attempts to measure the size of India's digital economy and how it interacts with other non-digital sectors of the economy utilising the available national input-output statistics, based on the already existing categorisation of economic activities. Following ADB's (2021) framework, the core digital economy is estimated to be 5.40 per cent (US\$ 0.11 trillion) of Indian economy's overall GVA in 2014 (US\$ 1.99 trillion), which increased by more than 15 per cent annually in absolute terms to contribute to 8.5 per cent (US\$ 0.22 trillion) of economy's GVA in 2019 (US\$ 2.62 trillion). Our estimates are broadly in line with ADB (2021) findings. The rate of growth of the core digital economy was 2.4 times faster than the annual growth rate of the whole economy. The core digital economy prominently acts as a supplier of value-added to the non-digital sectors because the forward linkages are stronger than the backward linkages. To increase the ability of the digital economy to act as a pull force by spurring innovation, generating efficiencies and improving services, policies such as Make in India, PLI scheme, which incentivise domestic production

of computers, electronics etc. are crucial for India's growth going forward.

Further, digital innovation leads to systemic effects in industries and markets, termed as digital disruption. The digitally dependent economy was around 22.4 per cent of the overall economy (around 0.6 trillion) in 2019. While there has been phenomenal growth of the core digital economy (powered by the ICT sector), the size of the digitally dependent economy has not grown at a comparable pace. This may be because digital innovations impact the economy over a longer term. Further, the weighted output multiplier for the digital sector has grown between 2014 and 2019, as opposed to the non-digital sector's output multiplier. This reflects greater investments in the digital sector will drive the total output of the economy by a larger value. Policymakers can make use of multipliers to comprehend the sectors which should be chosen for investment to enhance final demand, as the sectors that have the highest direct and indirect effects on the economy will have a greater impact on the economy.

The employment estimates, based on ADB's (2021) framework and PLFS (2019) show that 4.9 million

people were employed in the core digital sector. Considering the total digitally dependent economy, around 62.4 million workers are employed in sectors that are digitally disrupted. The extent of employed workers exposed to digital disruption underscores the need for digital literacy and skilling, more so considering the high growth of employment expected in the digital sector in coming years, as internet connectivity and industry 4.0 alter production and consumption technologies.

However, the study is not bereft of limitations. Access to granular data based on a 35x35 input-output table is limited. Further, it is difficult to capture the digital economy based on traditional statistics because of the numerous interactions of digital technology across various activities in the economy. These limitations have resulted in the commencement of efforts by organisations and countries to create satellite accounts within the System of National Accounts to estimate the value-addition of the digital economy. Thus, a wider discussion among national statistical agencies and academicians involved in developing measurement framework seems to be a step in the right direction.

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Annexure 1

Deriving Gross Value Added in terms of Leontief Inverse Coefficients

Following the standard input-output framework, gross output \mathbf{x} :

$$\mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{y} \quad \dots(1)$$

Where $(\mathbf{I} - \mathbf{A})^{-1}$: Leontief inverse, and \mathbf{y} : final demand
Assuming $(\mathbf{I} - \mathbf{A})^{-1} \equiv \mathbf{B}$

Vector of value-added coefficient \mathbf{v} is

$$\mathbf{v} = (v_1 \ v_2 \ \dots \ v_n) = \left(\frac{gva_1}{x_1} \ \frac{gva_2}{x_2} \ \dots \ \frac{gva_n}{x_n} \right) \quad \dots(2)$$

Here, $gva_j, j = 1, 2, \dots, n$ is the gross value addition (GVA) of industry j and x_j is the gross output of the same industry j . Economy-wide GVA is obtained by pre-multiplying \mathbf{v} to \mathbf{x}

$$\mathbf{v}\mathbf{x} = \mathbf{v}\mathbf{B}\mathbf{y} \quad \dots(3)$$

$$gva_1 + gva_2 + \dots + gva_n = \sum_{i=1}^n \sum_{j=1}^n v_i b_{ij} y_j$$

= economy – wide GVA

Disaggregating GVA across industries (Users and Suppliers)

Disaggregation of economy-wide GVA into an $n \times n$ matrix yields as industry's backward and forward linkages; indicating the industry's sources and destinations of value addition. In case of digital economy, these sources refer to industries from which digital sectors get inputs (digitally enabling industries), and destinations refer to industries that utilise digital sectors' output as inputs (digitally enabled industries).

The linkages can be obtained through matrix operations by utilising the \mathbf{v} , \mathbf{B} , and \mathbf{y} matrices. Let $\hat{\mathbf{v}}$ and $\hat{\mathbf{y}}$ be the diagonalised matrices of the direct value-added coefficient vector and the final demand vector.

$$\hat{\mathbf{v}} = \begin{bmatrix} v_1 & 0 & \dots & 0 \\ 0 & v_2 & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & v_n \end{bmatrix}; \hat{\mathbf{y}} = \begin{bmatrix} y_1 & 0 & \dots & 0 \\ 0 & y_2 & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & y_n \end{bmatrix}$$

Pre-multiplication of $\hat{\mathbf{v}}$ to \mathbf{B} and post-multiplication by $\hat{\mathbf{y}}$ yields is an $n \times n$ matrix $\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}}$ (Equation 4), which disaggregates economy-wide GVA across user and supplier industries in the economy.

$$\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} = \begin{bmatrix} v_1 & 0 & \dots & 0 \\ 0 & v_2 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & v_n \end{bmatrix} \begin{bmatrix} b_{11} & b_{12} & \dots & b_{1n} \\ b_{21} & b_{22} & \dots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \dots & b_{nn} \end{bmatrix} \begin{bmatrix} y_1 & 0 & \dots & 0 \\ 0 & y_2 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & y_n \end{bmatrix}$$

$$\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} = \begin{bmatrix} v_1 b_{11} y_1 & v_1 b_{12} y_2 & \dots & v_1 b_{1n} y_n \\ v_2 b_{21} y_1 & v_2 b_{22} y_2 & \dots & v_2 b_{2n} y_n \\ \vdots & \vdots & \ddots & \vdots \\ v_n b_{n1} y_1 & v_n b_{n2} y_2 & \dots & v_n b_{nn} y_n \end{bmatrix} \quad \dots(4)$$

The forward linkages of an industry correspond to the rows $\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}}$ matrix, indicating how various industries in the economy use the value-added created by a particular industry. Backward linkages of an industry correspond to the columns of the matrix, indicating the value-added contribution of all industries to the particular industry.

Quantification of Digital Economy in a Two-Industry Economy

To begin with, assuming two industries in an economy (Industry 1 is digital industry) results in a 2×2 $\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}}$ matrix

$$\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} = \begin{bmatrix} v_1 b_{11} y_1 & v_1 b_{12} y_2 \\ v_2 b_{21} y_1 & v_2 b_{22} y_2 \end{bmatrix} = \begin{bmatrix} \text{GVA of digital industry} \\ \text{GVA of non – digital industry} \end{bmatrix}$$

The sums of rows give total GVAs of digital and non-digital industries.

$$\hat{\mathbf{v}}\mathbf{B}\hat{\mathbf{y}} = \begin{bmatrix} v_1 b_{11} y_1 & v_1 b_{12} y_2 \\ v_2 b_{21} y_1 & v_2 b_{22} y_2 \end{bmatrix}$$

To measure the digital economy, the entire digital industry's GVA must be calculated. The term $v_1 b_{11} y_1$ is value-added contribution of the digital industry to its own products. The second term, $v_1 b_{12} y_2$, accounts for the value-added contribution of the digital industry to non-digital industry for its production. Thus, digital industry's forward linkage digitally enables Industry 2. The term $v_2 b_{21} y_1$ pertains to value added contributions from non-digital industry for digital industry's production. The first column shows that

final digital goods and services comprises contributions from both digital and non-digital industries. Thus, the non-digital industry enables digital industry production, through backward linkage. The term $v_2b_{22}y_2$ indicates value addition originated and used by the non-digital industry without any interaction with digital industry, and hence not considered as a part of the digital economy.

Thus, the **GVA attributable to the digital economy is attributed to the GVA of the digital industry plus the portion of the non-digital industry's GVA enabling the digital industry production:**

$$GVA_{\text{digital}} = GVA_1 + GVA_2 - v_2b_{22}y_2$$

$$GVA_{\text{digital}} = v_1b_{11}y_1 + v_1b_{12}y_2 + v_2b_{21}y_1$$

In Matrix Algebra, this could be written as:

$$GVA_{\text{digital}} = i^T \hat{v}B\hat{y}\varepsilon_1 + i^T(\hat{v}B\hat{y})^T\varepsilon_1 - [\text{diag}(\hat{v}B\hat{y})]^T\varepsilon_1 \quad \dots(5)$$

The first term, $i^T \hat{v}B\hat{y}\varepsilon_1$, of Equation calculates the backward linkage of the digital industry, the second term, $i^T(\hat{v}B\hat{y})^T\varepsilon_1$, yields the forward linkage. Diagonal entry in the $\hat{v}B\hat{y}$ matrix, $[\text{diag}(\hat{v}B\hat{y})]^T\varepsilon_1$ accounts for double-counted term, which is subtracted from GVA_{digital} . ε_1 is an "eliminator vector" used to mathematically eliminate entries that need not be included in calculations.

Quantifying the Digital Economy in an n-Industry Economy

Assume three industries in the economy, where first two industries are digital. Interaction between 2 or more industries results in double counting if the method discussed above is implemented.

$$\hat{v}B\hat{y} = \begin{bmatrix} v_1b_{11}y_1 & v_1b_{12}y_2 & v_1b_{13}y_3 \\ v_2b_{21}y_1 & v_2b_{22}y_2 & v_2b_{23}y_3 \\ v_3b_{31}y_1 & v_3b_{32}y_2 & v_3b_{33}y_3 \end{bmatrix}$$

A simple solution to aggregate similar industries and consider them as one sector suggested by the ADB framework is to use matrix aggregations, i.e., "the digital sector" (Chart 4). In the framework, "aggregator matrices" are used to aggregate Z, x, f, and gva matrices.

$$x_{\text{agg}} = Z_{\text{agg}}i + y_{\text{agg}}$$

$$x_{\text{agg}} = (I - A_{\text{agg}})^{-1}y_{\text{agg}}$$

$$(I - A_{\text{agg}})^{-1} \equiv B_{\text{agg}}$$

$$v_{\text{agg}} = (v_1 \ v_2 \ \dots \ v_{n-q-1})$$

The dimensions of the aggregator matrix are $[n-(q-1)] \times n$, where n is the original number of industries and q is the number of industries to be aggregated into one sector. Letting Q denote the aggregator matrix, aggregated matrices are given by the equations⁸:

$$x_{\text{agg}} = Qx$$

$$f_{\text{agg}} = Qf$$

$$gva_{\text{agg}} = Qgva$$

$$z_{\text{agg}} = QZQ^T$$

Equation 5 can be altered to get the revised GVA_{digital} equation (Equation 6)

$$\hat{v}_{\text{agg}}B_{\text{agg}}\hat{y}_{\text{agg}} = \begin{bmatrix} v_1b_{11}y_1 & v_1b_{12}y_2 & \dots & v_1b_{1,n-q-1}y_{n-q-1} \\ v_2b_{21}y_1 & v_2b_{22}y_2 & \dots & v_2b_{2,n-q-1}y_{n-q-1} \\ \vdots & \vdots & \ddots & \vdots \\ v_{n-q-1}b_{n-q-1,1}y_1 & v_{n-q-1}b_{n-q-1,2}y_2 & \dots & v_{n-q-1}b_{n-q-1,n-q-1}y_{n-q-1} \end{bmatrix}$$

$$GVA_{\text{digital}} = i^T \hat{v}_{\text{agg}}B_{\text{agg}}\hat{y}_{\text{agg}}\varepsilon_1 + i^T(\hat{v}_{\text{agg}}B_{\text{agg}}\hat{y}_{\text{agg}})^T\varepsilon_1 - [\text{diag}(\hat{v}_{\text{agg}}B_{\text{agg}}\hat{y}_{\text{agg}})]^T\varepsilon_1 \quad \dots(6)$$

Table A1.1: ADB National Input–Output 35-Sector Classification

Code	Sector
c1	Agriculture, hunting, forestry, and fishing
c2	Mining and quarrying
c3	Food, beverages, and tobacco
c4	Textiles and textile products
c5	Leather, leather products, and footwear
c6	Wood and products of wood and cork
c7	Pulp, paper, paper products, printing, and publishing
c8	Coke, refined petroleum, and nuclear fuel
c9	Chemicals and chemical products
c10	Rubber and plastics
c11	Other nonmetallic minerals
c12	Basic metals and fabricated metal
c13	Machinery, nec
c14	Electrical and optical equipment
c15	Transport equipment
c16	Manufacturing, nec; recycling
c17	Electricity, gas, and water supply
c18	Construction
c19	Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of fuel
c20	Wholesale trade and commission trade, except of motor vehicles and motorcycles
c21	Retail trade, except of motor vehicles and motorcycles; repair of household goods
c22	Hotels and restaurants
c23	Inland transport
c24	Water transport
c25	Air transport
c26	Other supporting and auxiliary transport activities; activities of travel agencies
c27	Post and telecommunications
c28	Financial intermediation
c29	Real estate activities
c30	Renting of machinery and equipment; other business activities
c31	Public administration and defense; compulsory social security
c32	Education
c33	Health and social work
c34	Other community, social, and personal services
c35	Private households with employed persons

Source: Asian Development Bank.

Table A1.2: Digital Product Groups (Central Product Classification Version 2)

Digital activities	Code	Product
Hardware	452	Computing machinery and parts and accessories thereof
	475	Disks, tapes, solid-state nonvolatile storage devices, and other media, not recorded
Software publishing	38582	Software cartridges for video game consoles
	478	Packaged software
	83143	Software originals
	8434	Software downloads
	84391	Online games
	84392	Online software
Web Publishing	83633	Sale of internet advertising space (except on commission)
	843	Online content
Telecommunications services	841	Telephony and other telecommunications services
	842	Internet telecommunications services
Specialised and support services	8313	IT consulting and support services
	83141	IT design and development services for applications
	83142	IT design and development services for networks and systems
	8315	Hosting and IT infrastructure provisioning services
	8316	IT infrastructure and network management services

Source: Capturing the Digital Economy: A Proposed Measurement Framework and Its Applications, ADB (2021).

Table A1.3: Digital Industry Classification (International Standard Industrial Classification of All Economic Activities Revision 4)

Digital activities	Code	Industry
Hardware	2620	Manufacture of computers and peripheral equipment
	2680	Manufacture of magnetic and optical media
Software publishing	5820	Software publishing
Web Publishing	6312	Web portals
Telecommunications services	61	Telecommunications services
Specialised and support services	62	Computer programming services, consulting, and other related services
	6311	Data processing, hosting, and related activities

Source: Capturing the Digital Economy: A Proposed Measurement Framework and Its Applications, ADB (2021).

Annexure 2**Employment in the Core Digital Economy**

ISIC code	MRIO classification	ISIC Description	Per cent of total employed
2620	c14	Manufacture of Computers and Peripheral Equipment	0.01
2680	c14	Manufacture of Magnetic and Optical Media	0
5820	c7	Software Publishing	0.02
61	c27	Telecommunications	0.14
62	c30	Computer Programming, Consultancy and Related Activities	0.55
6311	c30	Data Processing, Hosting and Related Activities	0.07
6312	c30	Web Portals	0.01
3290	c16	Manufacturing, n.e.c; recycling	0.09
5911	c34	Motion picture, video and television programme production activities	0.02
5920	c34	Sound recording and music publishing activities	0.01
Total			0.92

*A Composite Coincident Index for Unorganised Sector Activity in India**

by Chaitali Bhowmick[^], Sapna Goel[^],
Satadru Das and Gautam[^]

This article aims to bridge the existing information gap on unorganised sector by constructing a composite coincident index for the unorganised sector (UNCCI). Dynamic factor model, which applies kalman filter to derive the common trend from the constituent indicators has been used to construct the UNCCI. The UNCCI depict an uptick in unorganised activity since July 2022 and have remained resilient in Q2:2022-23. It showed reasonable co-movement with growth in derived unorganised sector quarterly series which qualify the UNCCIs as a credible index for monitoring unorganised sector activity on a regular basis.

1. Introduction

Nearly half of the measured economic activity in India takes place in the unorganised or informal sector, measurement of which remains a major challenge. Since the 2011-12 base year series, the National Statistical Office (NSO), in accordance with the sectoral classification laid out in the System of National Accounts (2008 SNA), has introduced institutional category-wise classification which classifies the entire economy into four sectors viz., private sector, public sector, general government and

households. Gross value added generated within the household sector¹ engaging less than ten total workers with power or twenty or more workers without power, broadly maps to unorganised sector activity and, henceforth will be referred to as unorganised sector GVA. Estimates of unorganised GVA are released on an annual basis with a lag of almost ten months since the end of a reference year. The very nature of operations of the unorganised or informal enterprises do not require maintenance of accounts or adherence to any regulations and hence, makes it difficult to have a proper account of unorganised sector activity in a timely manner. It may be mentioned that because of the similarities in conceptualisation of informal sector (at the international level) and unorganised sector (in India), the two terms are used synonymously in India and the same would be maintained in the present article.

From the perspective of the central banks, the primary objective of the monetary policy – to maintain price stability while supporting growth – requires diligent monitoring of the latest economic scenario. Since the official estimates of various economic indicators are low frequency variables and are released with certain lags, the bi-monthly monetary policy of the Reserve Bank relies heavily on a rich and expanding set of high frequency indicators (HFIs), available mostly on a monthly basis, pertaining to various segments of the economy. However, this information set mostly represents activity in the organised sector as most of the HFIs belong to the organised sector. Therefore, information pertaining to the unorganised sector a segment contributing almost half to the overall economy remains untracked due to non-availability of robust data. The National Statistical Office (NSO) – the official compiler of the national accounts data also resorts to organised sector indices to

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¹ Household sector comprises of agricultural activities undertaken on agricultural holdings - individually or in partnership, excluding plantation and corporate farming; all unincorporated private enterprises owned by individuals or households - own account or partnership.

estimate the unorganised sector activity. Furthermore, vast presence of the informal economy is primarily a developing country² phenomenon. Despite the effort from some multilateral organisations like the International Labour Organisation (ILO) and the World Bank to estimate the size of the informal economy, the research agenda regarding the measurement, estimation and other issues pertaining to the informal economy remains largely unexplored.

In this backdrop, this article aims to bridge the existing information gap on unorganised sector by constructing a composite coincident index for the unorganised sector (UNCCI) starting from April 2012 and latest updated till October 2022. The constituent indicators of the UNCCI pertaining to three categories – agriculture related indicators, activity pertains to construction, trade and transport, and other miscellaneous activity. Indicators are selected based on their dynamic correlation with the benchmark indicator – unorganised sector GVA growth. In addition to the UNCCI constructed using select indicators based on dynamic correlations, an alternative UNCCI has been developed for a shorter (2017 onwards) comprising richer datasets by including latest available indicators elaborated in later sections – 4 and 5. Section 2 provides an overview of how informal economy is conceptualised internationally as well as in India followed by an outline of the stylised facts relating to unorganised sector activity. Section 3 briefly reviews the relevant literature. Sections 4 describes the constituent indicators and methodology used for the study. The trajectory of the UNCCI and

their tractability with various benchmark indicators are presented in section 5. Section 6 touches upon informal economy from employment perspective. Section 7 concludes the article.

2. Conceptualisation of Informal Economy

Broadly, the informal economy, constitutes one of the components of the non-observed economy – (i) the informal economy defined as partial or total by-passing of public regulations; its activities not necessarily being carried out with the deliberate intention of avoiding payment of taxes or social security contributions; (ii) the underground economy concerning intentional by-passing of public regulations (under declaration) by registered firms; and (iii) the illegal economy involving illegal production of goods or services such as drugs etc. (OECD *et al.*, 2002).

The ILO in 1993 characterised informal sector in terms of the household enterprises which are involved in production of goods and services for sale or barter for which one or more of the criteria of limited size of employment, small scale of operation, non-registration of the enterprise or its employees are met [15th International Conference of Labour Statisticians (ICLS)]. This is in affiliation with the SNA 2008 outline of informal enterprises as a subset of the household (HH) sector³.

2.1. Indian experience

According to the definition espoused by the NSO in accordance with SNA 2008, HH sector includes – (i) agricultural activities undertaken on agricultural holdings, either individually or in partnership, excluding plantation crops and corporate farming; and (ii) within non-agricultural sector, all non-government unincorporated enterprises that are not classified as

² In emerging markets and developing economies (EMDEs), informal economy contributes one third in total output (GDP) and informal employment accounts for 70 per cent of total employment (World Bank, 2021). Informality in India is higher than its peers such as BRICS nations.

As per the ILO database, informal employment shares 88 per cent of total employment in India which is much higher than average of 49 per cent in BRICS economies. In India formal employment was 12 per cent of total employment in 2019, but it was 45 per cent for China (2014), 65 per cent for South Africa, 52 per cent for Brazil and roughly 79 per cent for Russia. In advanced economies more than two third employment is formal employment.

³ According to 2008 SNA, many informal enterprises are operated by an individual working alone, as a self-employed entrepreneur (own-account worker), or with the help of unpaid family members, while other informal unincorporated enterprises may engage paid workers. Household enterprises do not constitute separate legal entities independently of the household members who own them.

quasi-corporations⁴. It covers enterprises that are not registered under the Companies Act or *beedi* and cigar workers Act, 1966; and factories not registered under section 2(m)(i) and 2(m)(ii) of the Factory Act, 1948 which refers to factories with ten or more workers with aid of power, or twenty or more workers without power. The GVA from this sector broadly represents the unorganised sector GVA in India.

To compute the unorganised sector GVA, the NSO follows a combination of direct (survey-based method) and indirect methods (extrapolation). In general, for the base year benchmark estimates, a mixed household-enterprise survey approach is used *i.e.*, the quinquennial survey of Unincorporated Enterprises (excluding construction) and Employment Unemployment Survey [replaced with periodic labour force survey (PLFS) since April 2017] of the households. Based on the concordance between the two surveys, GVA estimates are derived at sub-sectoral level⁵. For the non-survey years, GVA growth is extrapolated by applying the growth rate of sector-specific indicators such as wholesale price index (WPI), index of industrial production (IIP), GVA from annual survey of industries (ASI), growth in goods and services tax (GST) collection *etc.* on the benchmark estimates of the survey year.

Against this backdrop, a few limitations can be highlighted. First, the benchmark survey is presently done on quinquennial basis and at times the lag often exceed five years, making the survey outdated with passage of time. The recent initiatives by the Government which could potentially contribute towards formalisation necessitates more regular surveys for adequately capturing the true state of the unorganised activity. Second, the indicators used for extrapolation are mostly representative of the

organised sector activity and therefore, fail to reflect the true state of the unorganised sector. The official sector-wise estimates of unorganised GVA components are latest available for 2020-21. Moreover, the growth in both organised and unorganised sectors has not always remained in tandem, and performance of the unorganised sector is observed to be largely driven by that of agriculture, forestry and fishing sector. Similarly, certain sectors *viz.*, construction, transport, storage, communication and services related to broadcasting, and other services have divergent growth trends between organised and unorganised counterparts for specific periods during the last decade posing challenges to estimation methodologies at disaggregated level. In entirety, the asynchrony in growth of the two sectors raises a question on the practice of using indicators of the organised sector to proxy the unorganised sector GVA as it does not represent the actual state of the unorganised sector (Chart 1).

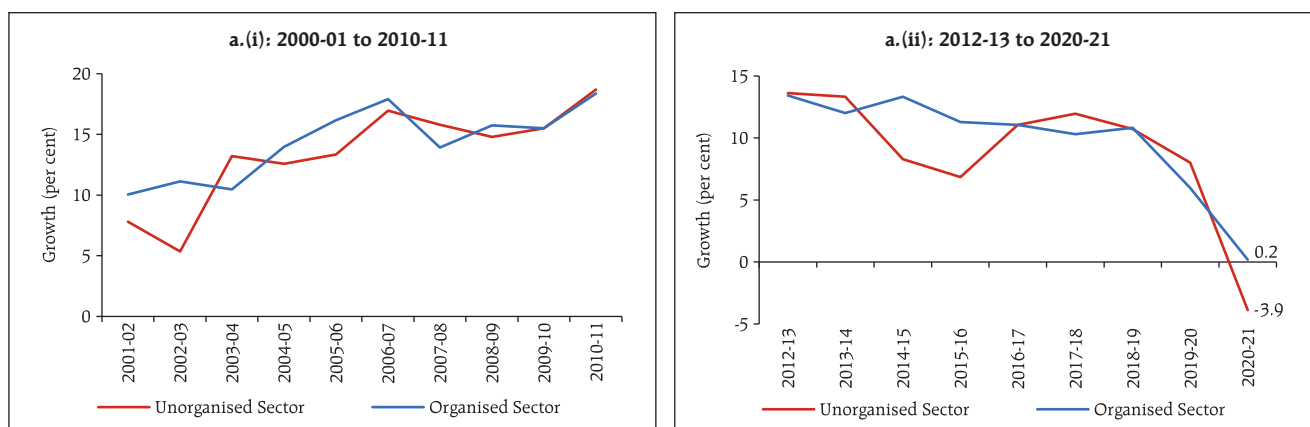
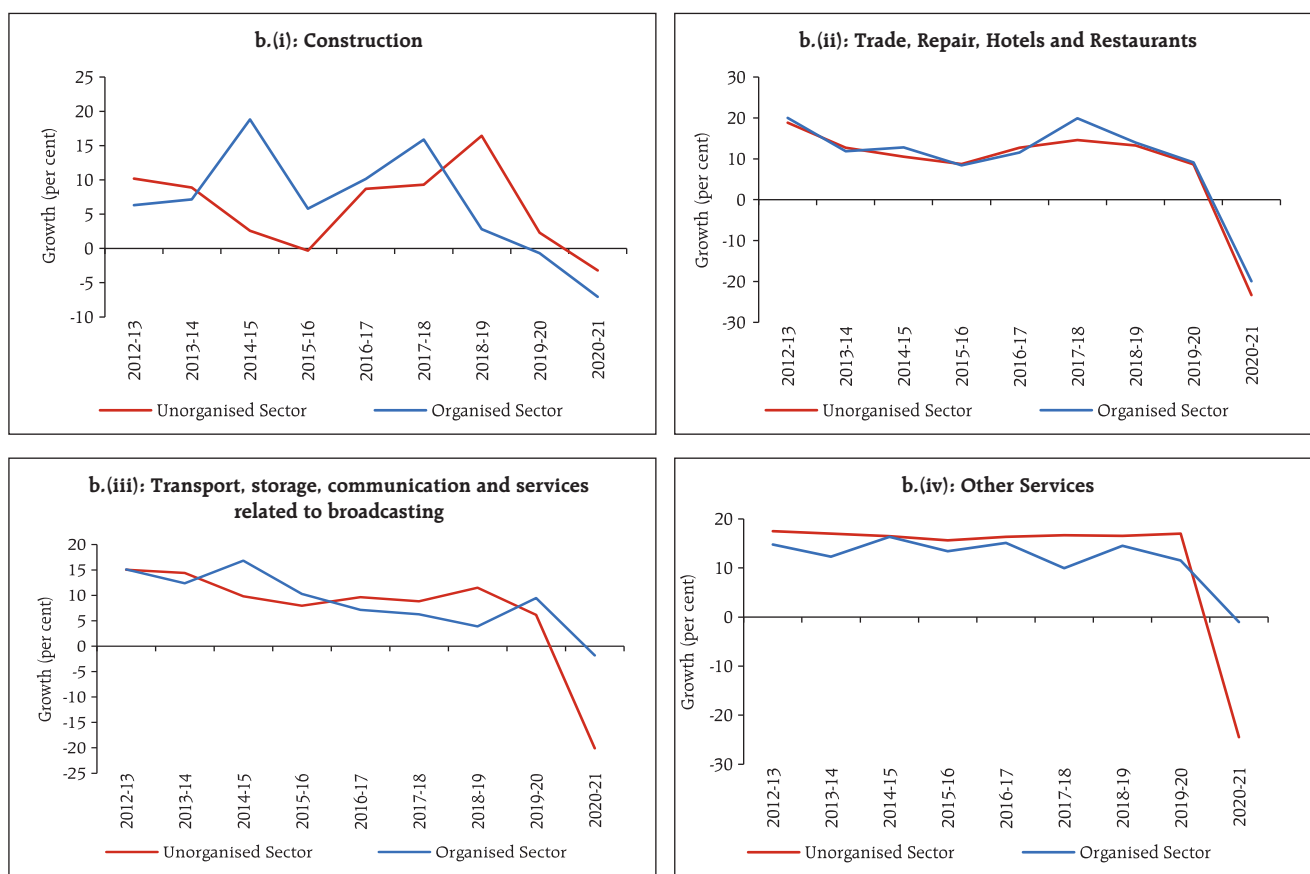
2.2. Stylised facts

The share of the unorganised sector in overall GVA reduced from 45.5 per cent in 2011-12 to 43.5 per cent in 2020-21 - a meagre drop of 2 percentage points over a decade (Annexure 1 Table 1). While the organised segment registered an average nominal growth of 9.8 per cent, the unorganised counterpart clocked in 8.9 per cent growth in the last decade. As has been widely conjectured, the lop-sided impact of the pandemic on the informal sector during 2020-21 is corroborated by the contraction of 3.9 per cent in the unorganised sector GVA *vis-à-vis* the marginal expansion of 0.2 per cent in organised sector GVA in 2020-21 [Chart 1a.(ii)].

At the sectoral level, the unorganised activity is largely concentrated in four sectors – agriculture, forestry and fishing; construction; trade, repair, hotels and restaurants; and real estate, ownership of dwellings and professional services. Compared to their decadal average, the informal segment in all sector except agriculture, mining and quarrying, electricity and construction suffered loss of share

⁴ Changes in methodology and Data Sources in the New Series of National Accounts (Base Year 2011-12), 2015.

⁵ The survey-based approach is not used for computing estimates for agriculture; mining and quarrying; and construction.

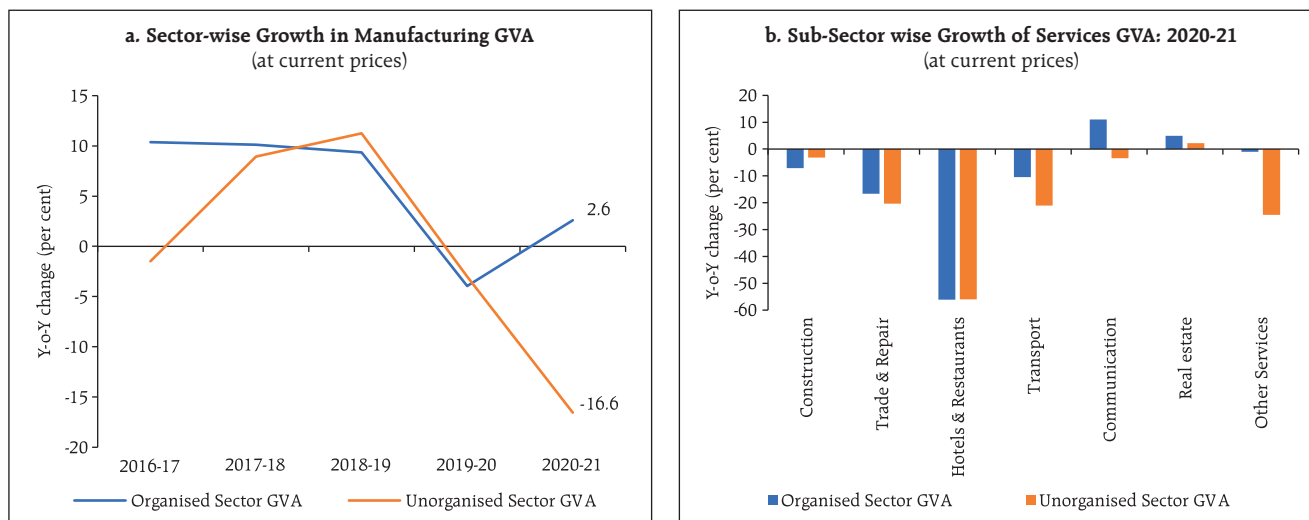
Chart 1: Asynchronous Organised and Unorganised GVA Trends (at current prices)**a. Overall GVA****b. Sectoral Components**

Notes: (i) Organised sector GVA has been calculated by subtracting unorganised sector GVA from overall GVA; (ii) Shares of unorganised sector GVA for 2000-01 to 2010-11 (on base year 2004-05) provided in National Accounts Statistics 2008 and 2009 have been used for computation in Chart 1 a.(i).

Source: NSO; and author's estimates.

in 2020-21. The pandemic-induced asymmetric impact is visible in both manufacturing and services. Within manufacturing, while organised

sector nominal GVA grew by 2.6 per cent, the unorganised component contracted by 16.6 per cent in 2020-21. Similarly, within services, though both

Chart 2: Sectoral Growth in GVA

Note: Organised sector GVA for sub-sectors within services has been calculated by subtracting unorganised sector GVA from total GVA.

Sources: NSO; and author's estimates.

organised and unorganised constituents of hotels and restaurants; other services; transport; trade and repair; and construction registered a contraction, the contraction was more entrenched in the latter (Chart 2).

3. Literature review

There are three main methods to estimate output of the informal economy, viz., direct approach, indirect estimation and model-based methods. In the direct method, primary data collection on informal output is carried out by way of sample surveys, censuses or questionnaires. The lack of adequate resources to conduct these surveys on a frequent basis necessitates looking at alternative estimation techniques which are being developed over the years. The indirect estimation exploits the economic relationship between variables under specific assumptions and studies the differences between postulated hypothesis between variables and their actual realisation. Some popular indirect approaches include electricity consumption and GDP of the economy; currency demand approach, Bayesian method averaging, however, each has been criticised for its limiting assumptions or for restrictive

focus on only one aspect of the informal economy. The theoretical model-based methods set out a computation formula or a model to measure the output or size of the informal economy as an unobserved latent variable. The multiple indicator multiple cause (MIMIC) and dynamic general equilibrium (DGE) methods are primarily used for such estimation; however, these too have their own limitations such as usage of *ad hoc* econometric models that are subjective, sensitive to sample coverage and not reliant on micro behaviour of households, firms or other agents of the economy.

In Indian context, the National Statistical Commission estimated the size of the informal economy to be 52 per cent of the total for 2017-18 (Murthy, 2019). The World Bank (2021), using model-based approaches, estimated India's informal output to be in the range of 16 to 19 per cent of GDP for 2018-19. A few recent studies have probed the idiosyncratic impact of the pandemic on the informal economy in India. Estupiñan and Sharma (2020) found that in India, formal workers' wages were cut by 3.6 per cent, while informal workers experienced a much sharper fall in wages by 22.6 per cent for the forty-day

period of Lockdown 1.0 and Lockdown 2.0. The State Bank of India (2021) assessed the size of the informal economy to be not more than 15 to 20 per cent in 2020-21 assuming that the shrinkage in economy post-pandemic was mostly informal. Kesar *et al.* (2021) from a large-scale survey of informal workers found that during the lockdown self-employed workers in urban areas on average suffered most in terms of reduction in food intake relative to those in the agriculture sector.

However, the caveats in existing measurement practices have left a gap in quantifying the size of the informal economy or the activity in the unorganised sector. This study, therefore, deviates from the existing literature by making a one-of-its-kind attempt towards an indicator-based approach for estimating and tracking the unorganised sector activity, thereby, adding another strand to the literature. The exercise uses the dynamic factor model (DFM) estimation which has been discussed in detail in section 4.4 of the article.

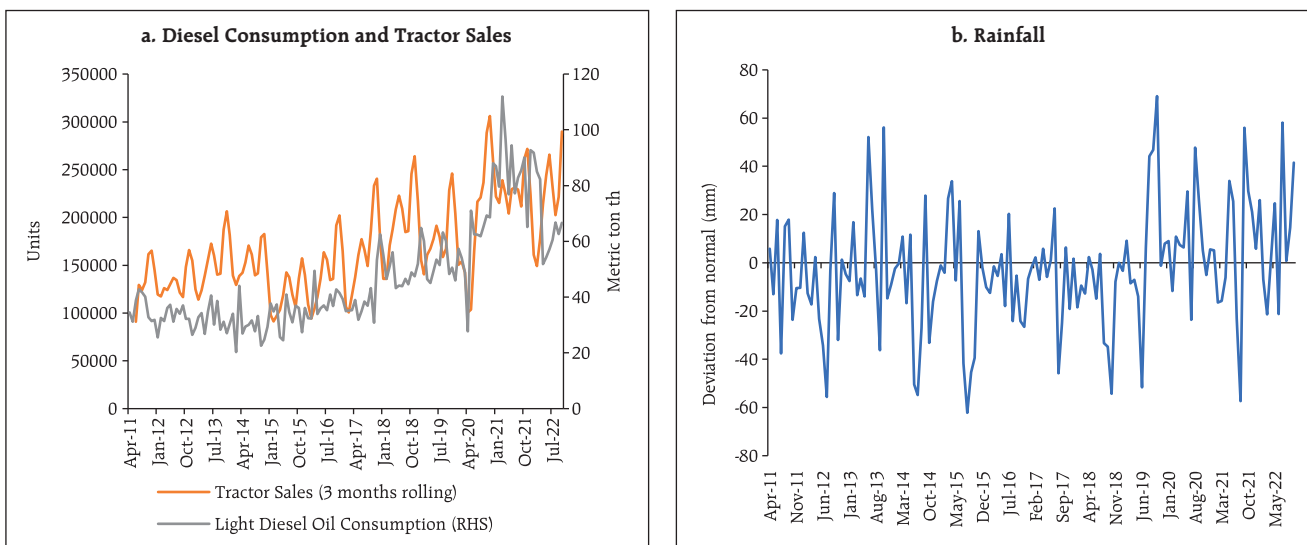
4. Empirical Analysis

4.1 Data Description

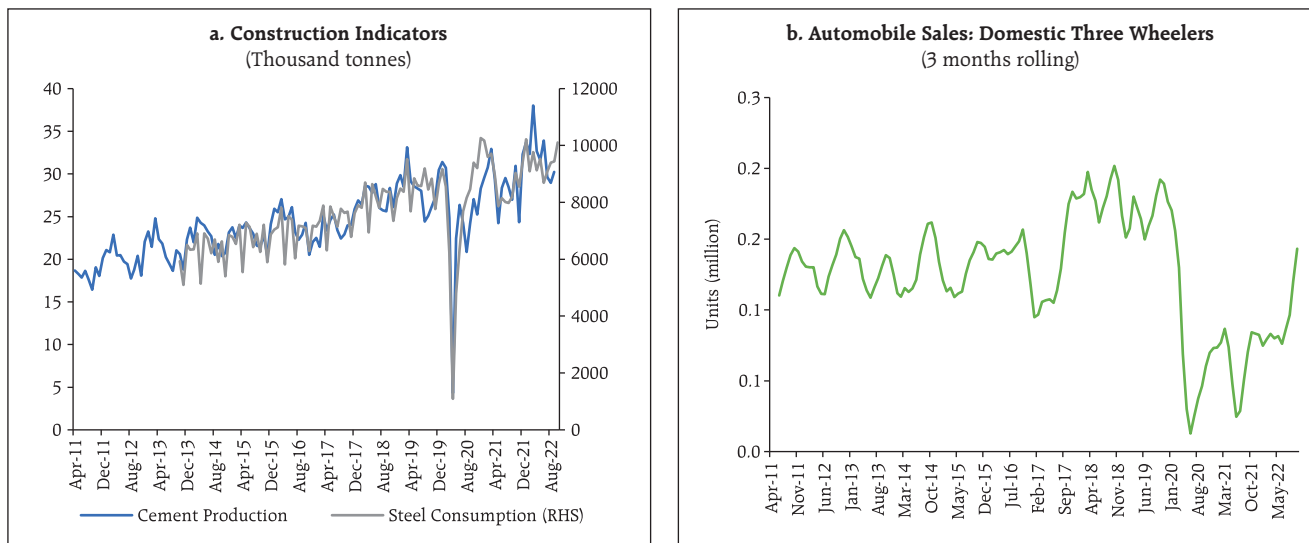
A total of fifteen HFIs (Annex 1 Table 2) were identified for construction of the UNCCI. The variables, though not completely overlapping with the contours of unorganised sector, somewhat mimics the activity in these units.

Since the unorganised sector contributes more than 90 per cent to the agriculture and allied activities' GVA, sector's proximate indicators – sales of tractor sales, rainfall deviation, light diesel oil consumption used in low RPM engines and equipment, irrigation pumps *etc.* have been considered for representation of this sector (Chart 3). Indicators pertaining to construction, trade and transport related activity include steel consumption and cement production – primary raw materials within construction, and domestic three-wheeler sales which are mostly used by small traders and transporters (Chart 4). Indicators for miscellaneous activities include work demanded under *Mahatma Gandhi National Rural Employment*

Chart 3: Trends in HFIs Selected for Composition of UNCCIs: Agriculture and Allied Sector



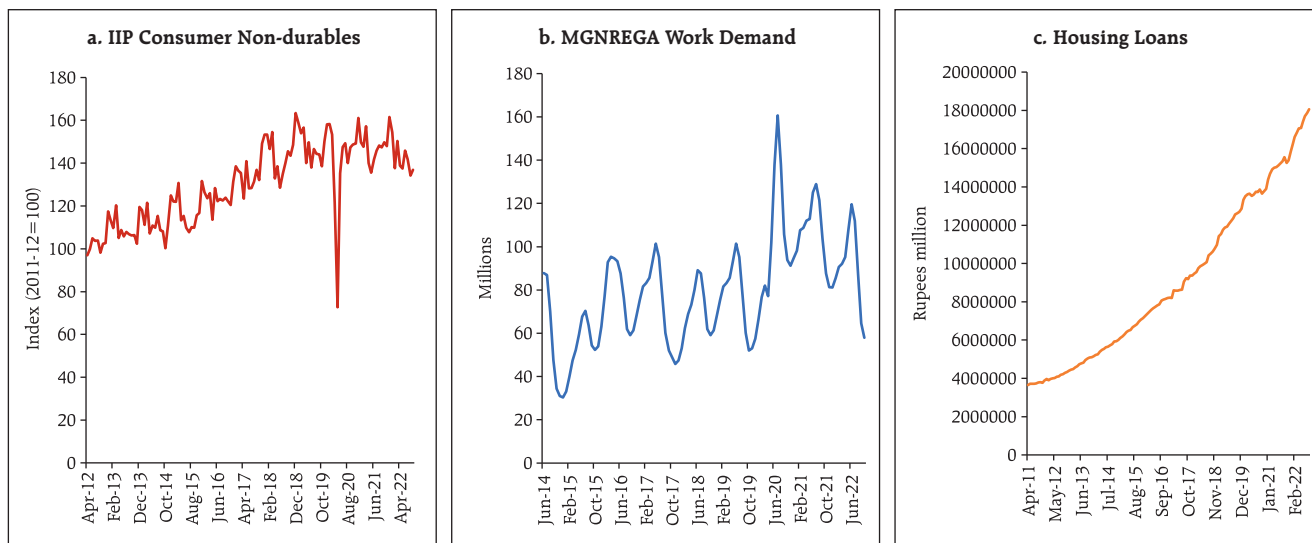
Sources: CEIC; CMIE; Office of Economic Adviser; and IMD.

Chart 4: Trends in HFIs Selected for Composition of UNCCIs: Non-Agriculture

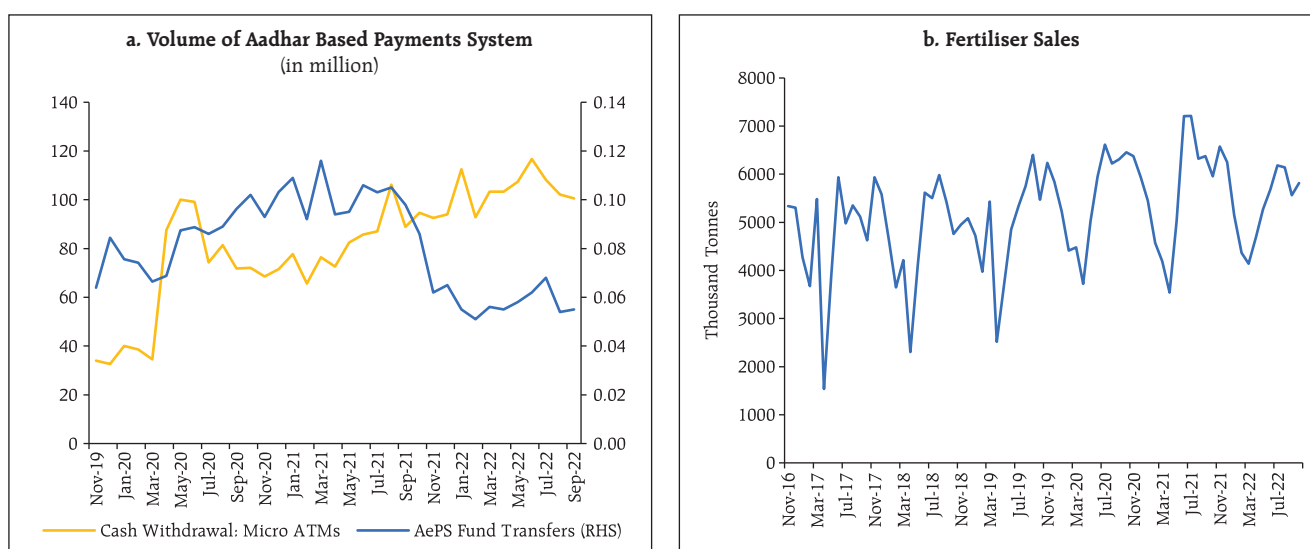
Sources: CEIC; CMIE; Office of Economic Adviser; and IMD.

Guarantee Act (MGNREGA) indicating the labour demand conditions of unskilled workers in rural areas; IIP for consumer non-durables consisting of food items and fast-moving consumer goods, the demand for which relates closely to farm and non-farm activity, currency with the public – a proxy for cash-based nature of activity within unorganised

enterprises, and housing loans disbursed by the scheduled commercial banks representing activity in the construction sector (Chart 5). The trends in the identified HFIs exhibited non-stationarity. Of the total, UNCCIs have been constructed based on the availability of data, the selection criteria of which has been elaborated in the following sub-section.

Chart 5: Trends in HFIs Selected for Composition of UNCCIs: Miscellaneous

Source: CEIC; CMIE; MOSPI; MGNREGA MIS Reports and Reserve Bank of India (RBI).

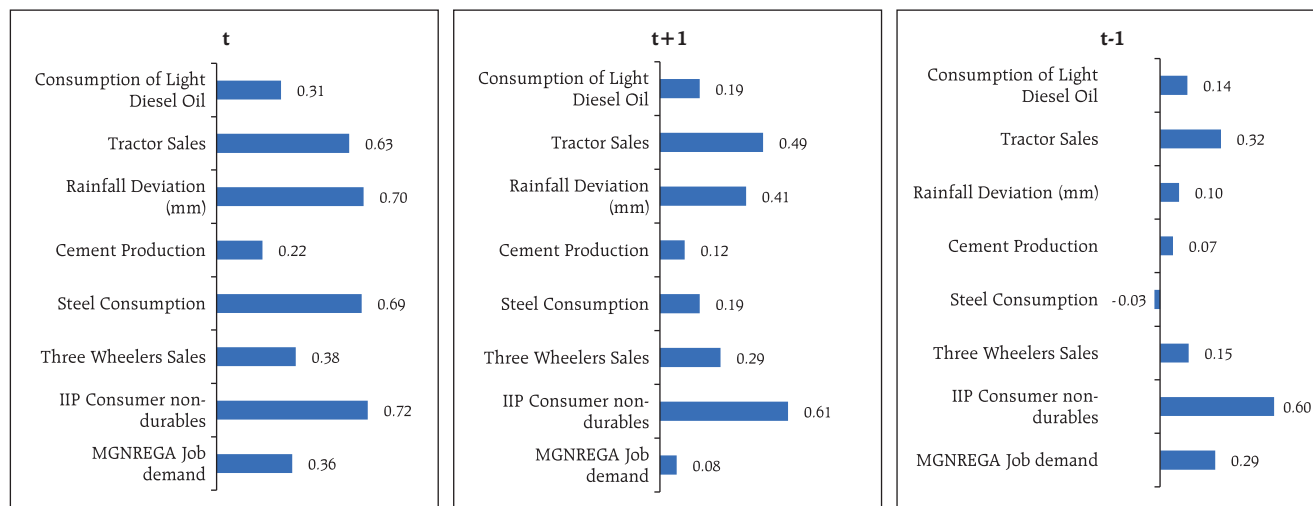
Chart 6: Recent Available Indicators

Sources: CMIE; and RBI.

In addition, a few recently available HFIs relevant for unorganised sector activity have also been explored. These include Aadhaar enabled payment system (AePS) which is a financial transactions system facilitating secure transactions at micro-ATMs through business correspondent of any bank using Aadhaar-based technology, thereby, furthering the goals of financial inclusion, particularly in the unbanked and underbanked regions. Data on Aadhaar enabled retail credit transfer and cash withdrawal at micro-ATMs have been published by RBI since November 2019 (Chart 6). Fertiliser sales is another agriculture sector indicator available 2017 onwards. The number of data points for these indicators are too low to establish any statistically significant correlation, and, therefore, do not qualify for statistical tests on account of limited data points. However, anecdotal evidence suggests that these services cater predominantly the people engaged in unorganised activity. Therefore, an alternative 9-indicator UNCCI for a shorter duration (April 2017 onwards) has also been attempted incorporating these indicators.

4.2 Indicator Selection

The next step involves indicator selection based on both statistical tests as well as the judgment. Contemporaneous correlation and one period lag between y-o-y growth in indicators and unorganised sector GVA growth have been chosen as the selection criteria for the indicators. Indicators which exhibited sufficiently strong and statistically significant correlation with either the same period or one period ahead GVA growth or both are selected as the final set of indicators for constructing the UNCCIs. Since the cyclical pattern and seasonal variation in agriculture and non-agriculture activity differs substantially, correlation exercise has been performed separately for unorganised sector agriculture GVA growth y-o-y growth in all monthly indicators identified for agriculture. Rest of the indicators are clubbed together into non-agriculture category and correlations have been performed with unorganised sector non-agriculture GVA. Most of the indicators show significantly high contemporaneous correlation while a few indicators also exhibit lead indicator property

Chart 7: Lead-lag Correlation of HFIs with Quarterly Unorganised GVA Growth

Note: 't' implies contemporaneous correlation with GVA growth; 't+1' implies correlation with one period ahead GVA growth, and 't-1' implies correlation with one period lag GVA growth.

Source: Author's estimates.

(Chart 7). Among the indicators, steel consumption, rainfall deviation, tractor sales, three-wheeler sales, IIP consumer non-durables exhibit stronger correlations.

4.3 Benchmark Indicators

As mentioned earlier in this article, the official estimates of the unorganised sector GVA are available on an annual basis which imply non-availability of target variables at quarterly frequency against which the UNCCI may be tracked. Although it is possible to track the co-movement of the constituent indicators with the benchmark indicator graphically based on the annual series, establishing a formal relationship through statistically significant correlations require more data points. Therefore, the quarterly GVA series are derived from the annual series for examining the co-movement of the constituent indicators with the benchmark as selection criteria and ex-post tracking of the UNCCI. Beside total GVA of the unorganised sector, GVA growth in unorganised agriculture and allied activity, construction, and trade, hotel, transport, communication, and services related to broadcasting have been considered as benchmarks owing to their large unorganised segment (Annex I Table 1).

Furthermore, an alternative target variable based on a distinct dataset is also generated for robustness purpose which is presented later in section 6.

4.3.1 Derivation of Quarterly Unorganised Sector GVA

The quarterly series of unorganised sector GVA has been derived from the official series of annual GVA for the unorganised sector. To generate the series, the quarterly shares, calculated from the overall nominal GVA, have been applied on the annual estimates of the unorganised sector at current prices. The derived series has then been deflated using the all-India GVA deflators at the sectoral level to arrive at the constant price estimates for the unorganised sector.

4.3.2 Compilation of Employment Shares from Survey Data

A robustness exercise has been performed using quarterly employment growth in the informal sector which is compiled from the unit level data of the PLFS, available from Q2:2017-18 to Q1:2021-22. In PLFS, the employment in the informal sector is measured as the sum of all workers employed in informal enterprises as principal status. As per their report, an informal

enterprise is defined as those enterprises which are proprietary in terms of ownership or are partnership between family members or neighbors. On the other hand, the formal sector consists of limited partnerships, limited corporations, the public sector, and charitable institutions. It must be mentioned that PLFS only defines formal-informal enterprises for the non-agricultural sector. Therefore, in this study, all workers from the agricultural sector are added to the informal sector except for corporate or government farming.

4.4 Construction of the Index

Based on the correlation results, indicators have been shortlisted. The chosen HFIs for agriculture have been combined into a composite index for unorganised agricultural sector. Similarly, indicators showing high correlation with non-agricultural GVA are used for constructing a composite index for unorganised non-agriculture sector. Finally, the composite index has been created by applying weighted share of unorganised agriculture and allied activity and that of non-agriculture GVA. In case of agriculture, a total of four indicators have been shortlisted for their robust correlation with agriculture GVA (Table 1). For non-agriculture, six indicators have been selected based on the same criteria (Table 1). In addition, a 9-indicator UNCCI has been developed encompassing some latest available indicators representing unorganised sector activity *viz.*, AePS fund transfer, cash withdrawal at micro-ATMs, and fertiliser sales.

DFM is a leading framework for construction of economic index from multiple variables where the latent vectors are the sum of the dynamic effect of the common factors and the idiosyncratic disturbance component (Geweke, 1977); (Sargent and Sims, 1977); (Stock and Watson, 2016). The UNCCIs have been developed using DFM in the state-space framework which uses Kalman filter to derive the common trend

Table 1: HFIs used in construction of UNCCIs

S. No.	Indicators	Composite UNCCI		9-indicator UNCCI
		Agri	Non-Agri	
1	Diesel consumption: Light Diesel Oil	✓		✓
2	Rainfall Deviation	✓		
3	Tractor Sales	✓		✓
4	IIP Consumer Non-durables	✓	✓	
5	Automobile Domestic Sales: Three-wheeler		✓	✓
6	Steel Consumption		✓	✓
7	Cement Production		✓	✓
8	Housing Loans		✓	
9	MGNREGA: Work Demand Persons		✓	✓
10	Fertiliser Sales			✓
11	Retail Credit Transfer: AePS Fund Transfer			✓
12	Cash withdrawal at micro-ATMs			✓

Notes: (i) MGNREGA job demand is inverted to account for the fallback characteristic of this sector; (ii) Currency with public has been dropped from the final set due to poor correlation with unorganised GVA growth.

from the constituent indicators. The model produces a smaller number of unobserved or latent factors from a large set of variables. In our exercise, we have considered a single factor which encapsulate the co-movements in the set of indicators.

Finally, the single factor which is in standardised form is scaled to a comparable scale of quarterly unorganised sector GVA growth using scaling parameters generated from the ordinary least square (OLS) regression with unorganised GVA growth as the dependent variable and the single dynamic factor as the explanatory variable (equation 1).

$$GVA^q \text{ growth} = \alpha + \beta \times DFM^q + D_1 + \varepsilon^q \quad \dots(1)$$

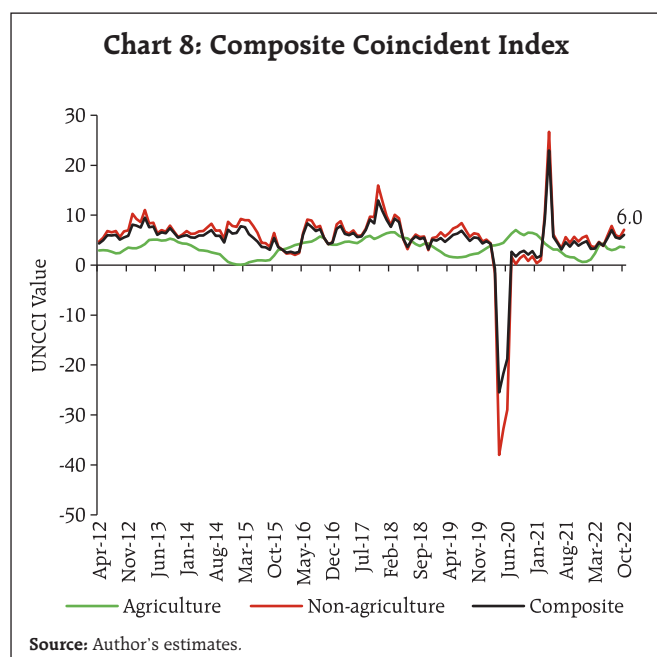
where, $GVA^q \text{ growth}$ is y-o-y growth in real GVA of the unorganised sector;

DFM^q denote the quarterly average of the monthly common factor;

D_1 denotes the dummy variable for Q1:2020-21; and ε^q is the disturbance term with usual properties.

5. Trajectory of the UNCCI

The UNCCI (both sectoral and composite) represent the overall trajectory in the unorganised sector activity reflecting pertinent impact of relevant economic or non-economic but related events which occurred during the period under consideration – April 2012 to October 2022 (Chart 8). The 4-indicator agriculture UNCCI captures the dip during the two successive years of drought 2014-15 and 2015-16. The index rebounded sharply in the following two years reflecting robust agricultural growth in next two consecutive years. The non-agricultural UNCCI corroborates the slowdown in construction and transportation activity during the middle years of 2015-16 and 2016-17. Moreover, the non-agricultural UNCCI along with combined composite UNCCI clearly demonstrate the cataclysmic impact of COVID on the non-agricultural unorganised sector. The index had a steady recovery in the latter half of 2020. Interestingly, the trend in UNCCIs during the COVID period appears consistent with the narrative that during the first wave, the adverse impact of the pandemic was relatively contained in rural areas, having higher share of unorganised sector, than the



urban areas. In contrast, the impact was protracted during and in the aftermath of the second wave as the virus trickled down to the rural regions. There has been an uptick in unorganised activity since July 2022 and the composite UNCCI has remained resilient in Q2:2022-23.

5.1. Relationship with Benchmark Indicators

Both the sectoral and overall UNCCIs exhibit reasonable co-movement with the benchmark indicators considered in this study (Chart 9). Quarterly unorganised GVA growth exhibit 88 per cent correlation with overall UNCCI (Table 2). Correlation turns out to be stronger in case of non-agriculture UNCCI when compared with agriculture. Correlations between non-agriculture UNCCI and sectoral GVA of construction and trade, hotel, transport, and communication GVA growth are above 80 per cent indicating robust tracking by the index (Table 2).

Table 2: Robustness Checks with Benchmark Indicators

UNCCI	Benchmark Indicator	Correlation Coefficient	Sign Accuracy (per cent)	Theil's U
Composite UNCCI	Unorganised Sector GVA	0.88***	94.4	0.36
Agri UNCCI	Unorganised Agri GVA	0.58***	86.1	0.49
	All-India Agri GVA	0.57***	88.9	0.5
Non-Agri UNCCI	Non-Agri Unorganised GVA	0.89***	94.4	0.37
	Non-Agri all-India GVA	0.88***	97.2	0.41
	Unorganised Construction GVA	0.82***	83.3	0.63
	All-India Construction GVA	0.86***	86.1	0.59
	Unorganised trade, hotels, transport and services related to broadcasting GVA	0.86***	91.7	0.55
	All-India trade, hotels, transport and services related to broadcasting GVA	0.89***	91.7	0.48

Note: ***p < 0.01.

Source: Author's estimates.

Chart 9: Relationship with Benchmark Indicators

Source: NSO; and author's estimates.

One common test of reliability is the sign accuracy⁶ in the growth rate of constructed series against the actual series. All the UNCCIs clear the sign accuracy test quite well with more than 80 per cent, respectively, for all the benchmark indicators. Theil's U statistic⁷, another statistical metric, is well below 1

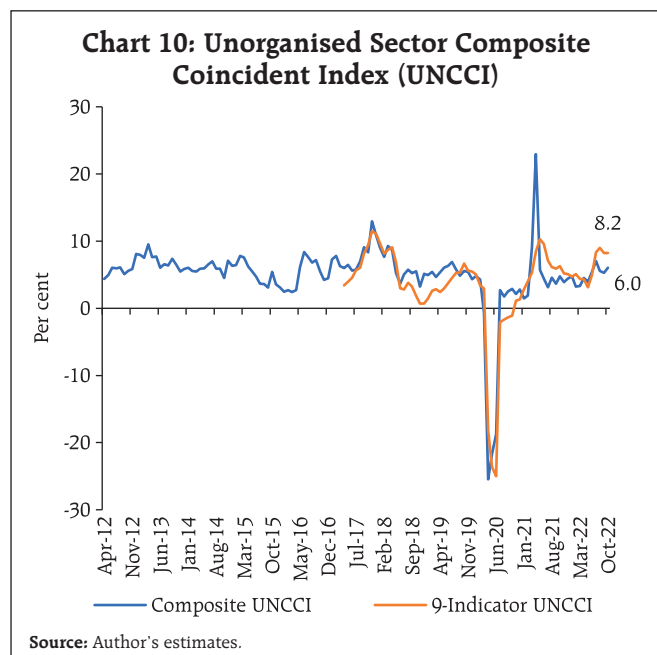
⁶ If the sign accuracy crosses the 50 per cent mark, the constructed series is assumed to be a reliable one for usability (Mohanty, Hansda and Jain, 2003).

⁷ A measure of nominal association, if value of Theil's U is less than 1, then, the forecasting technique is better than guessing.

for all indicators and is lowest for the overall UNCCI ensuring better prediction by the UNCCIs compared with naïve forecast.

5.2 Alternative 9-Indicator UNCCI

The 9-indicator UNCCI for a short duration encompassing recent data displays consistent tracking *vis-à-vis*, the overall UNCCI (Chart 10). The recent trajectory of the two indices is broadly similar – exhibiting a descent since the onset of the Russia-Ukraine war in early 2022 reflecting headwinds from



skyrocketing of energy prices and synchronised monetary policy tightening across the globe.

The correlation between the two UNCCIs for the overlapping period turns out significantly high at 0.89. As more data points are required for establishing suitability of the statistical robustness of the indicators, the composite UNCCI may be used for tracking unorganised sector activity in near future, while both indicators would be updated on a regular basis.

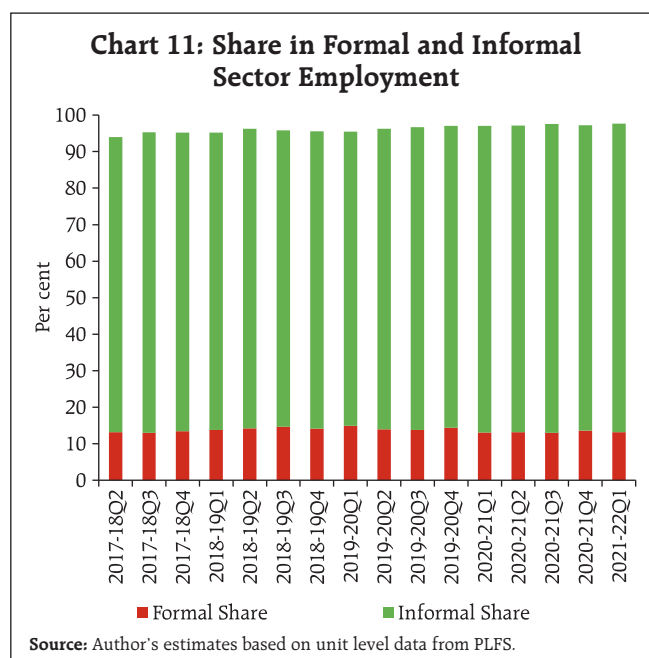
6. Unorganised Sector from Employment Perspective

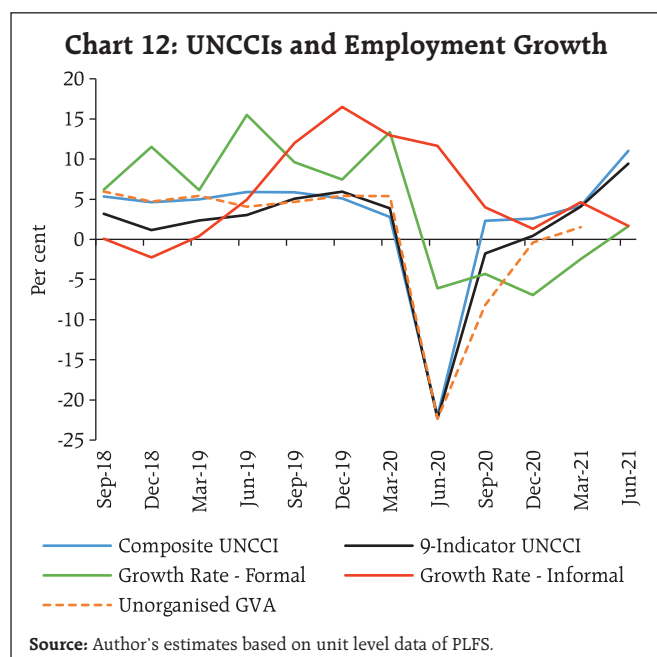
In effect, informality can be viewed from two standpoints – (i) the informal sector (production or enterprise-oriented perspective); and (ii) the informal employment (labour perspective). So far, the former view has been discussed widely in the article. However, supplementing the 15th ICLS guidelines, the ILO in 2003 endorsed a statistical framework of informal employment (Annex 1 Table 3), defining it as a form of employment with no employment or social security benefits *viz.*, paid leave, pension entitlements, written contract *etc.* provided by the employer, thereby, encompassing all forms of informal jobs carried out

in both formal as well as the informal enterprises (17th ICLS).

An informal worker in India comprises – (i) home-based worker, self-employed worker, or a wage worker in the unorganised sector (as defined under the Unorganised Workers' Social Security Act, 2008); and (ii) worker in the organised sector not covered by any of the Acts such as the Employee's Compensation Act, 1923, the Industrial Disputes Act, 1947, the Employees' State Insurance Act, 1948 *etc.* In present digital age, however, the traditional relation between employer and employee is changing which makes the distinction between formal and informal workers more complex.

As per the Economic Survey 2021-22, of the additional workers who joined the workforce in 2019-20, roughly 98 per cent were in the unorganised sector and 90 per cent were engaged in informal employment. As on 2019-20, 89 per cent of the workforce was in the informal sector while 82.2 per cent worked in unorganised sector (Chart 11). Nevertheless, as 98 per cent of unorganised workers also fall under informal sector category, both the





terms may be used interchangeably irrespective of the conceptual difference. Formal sector employment registered deeper contraction as compared with informal sector employment during the COVID period. This could be due to large share of informal employment in the agriculture sector which was exempted from lockdowns and other restrictive measures.

In relation to the current exercise, robustness check of UNCCIs is carried out from the employment perspective by generating growth series from PLFS data (as elaborated in section 4.2.2). Informal employment growth displayed a downward trend since the second half of 2019-20. However, informal sector employment did not exhibit strong coherence with unorganised GVA growth (Chart 12), a key reason being the small sample size and disguised unemployment. In contrast to large scale output loss on account of COVID-19, informal sector employment showed resilience during the first wave of COVID-19.

7. Conclusion

The article attempt to address the problem of lack of timely information on unorganised sector

activity which could serve as a crucial input for monetary policy. In view of this, an attempt has been made by developing a coincident index at a monthly frequency. Dynamic factor model, which applies kalman filter to derive the common trend from the constituent indicators has been used to construct the UNCCI. The UNCCI has been available from April 2012 onwards and updated till October 2022. The UNCCIs depict an uptick in unorganised activity since July 2022 and have remained resilient in Q2:2022-23. The overall as well as the sectoral (agriculture and non-agriculture) UNCCIs showed reasonable co-movement with growth in derived unorganised sector quarterly series which qualify the UNCCIs as a credible instrument for monitoring unorganised sector activity on a regular basis. The 9-indicator UNCCI enriched with newly available data exhibits robust tractability.

Furthermore, the Government of India has initiated regular surveys such as PLFS, All-India Quarterly Establishment based Employment survey (AQEES) etc., and is in the process of introducing new surveys such as All-India Survey of Migrant Workers, All-India Survey on Domestic Workers, All-India Survey on Employment generated in Transport Sector, All-India Survey of Employment Generated by Professionals. All such endeavours would provide quarterly estimates on employment and related variables in both organised and unorganised segments, going forward.

However, there are a few caveats in the study which need to be mentioned explicitly. Due to the non-availability of long time series of the selected HFIs, time period of the study turned out to be shorter relative to number of observations required for standard time series analysis. DFM, by virtue of its dimension reduction feature, provides some cushion against the loss of degrees of freedom. Second, the benchmark indicators used in this exercise are derived indicators, based on assumptions, some of which

may appear to be strong and restrictive. Furthermore, quarterly shares of overall GVA have been used to generate the quarterly distribution of unorganised sector GVA, which is another approximation. The selected indicators are those likely to have larger overlapping with unorganised sector activity and have sufficient number of observations. Hence, there is no one-to-one mapping of the selected indicators with unorganised sector activity and the first stage of indicator selection involves fair amount of judgment of the authors. Despite the limitations, the UNCCI displays reasonable coherence to serve as a suitable index for monitoring unorganised sector activity in a timely manner.

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Annexure-1**Table 1: Sector-wise Share of Unorganised Sector GVA**
(at current prices)

Economic Activity	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
1. Agriculture, forestry and fishing	94.8	94.6	94.8	94.5	95.0	95.2	95.5	95.5	95.8	95.7
2. Mining and quarrying	22.6	22.8	20.9	21.4	20.9	23.7	26.7	27.0	27.5	28.2
3. Manufacturing	12.7	13.4	13.9	13.1	13.8	12.5	12.4	12.6	12.7	10.6
4. Electricity, Gas, Water supply & Other utility services	3.2	3.4	3.7	4.4	4.2	5.0	5.3	6.1	6.4	7.0
5. Construction	76.4	77.1	77.4	74.7	73.5	73.3	72.1	74.6	75.1	75.9
6. Trade, repair, Hotels and Restaurants	56.0	55.8	56.0	55.5	55.5	55.8	54.7	54.5	54.4	53.4
7. Transport, Storage, Communication & Services related to broadcasting	39.6	39.5	40.0	38.5	38.0	38.5	39.1	40.8	40.0	35.2
8. Financial services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. Real estate, Ownership of dwelling & Professional services	57.2	56.3	54.0	51.7	49.0	46.7	48.8	47.3	45.8	45.1
10. Public administration and Defence	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. Other services	22.6	23.0	23.8	23.8	24.1	24.3	25.4	25.8	26.7	21.8
12. Total GVA at basic prices	45.5	45.5	45.8	44.7	43.7	43.7	44.1	44.0	44.5	43.5

Source: NSO.

Table 2: List of indicators used to compute composite indicator for unorganised sector

S. No.	Indicator	Data Source	Description
1	Agriculture related indicators		
1.1	Tractor sales	SIAM, CMIE	India being an agriculture-driven economy and unorganised sector comprising more than 90 per cent share in agriculture and allied activities GVA, the indicators are used as a proxy for activity in the sector
1.2	Fertiliser sales		
1.3	Rainfall deviation	Indian Meteorological Department	
1.4	Diesel consumption: Light Diesel Oil	Petroleum Planning & Analysis Cell	Proxy for fuel consumption of the unorganised firms using low RPM engines and equipment etc.
2	Construction, trade, hotel, and transport services		
2.1	Steel consumption	Joint Plant Committee	Unorganised sector roughly contributes 75 per cent to the sectoral GVA which is extrapolated by proximate indicators of steel and cement
2.2	Cement Production	Office of Economic Adviser	
2.3	Automobile Domestic Sales: Three-wheeler	SIAM	Represents usability of three-wheelers as a means of transportation by the unorganised segment
3	Aadhar based Payment		
2.1	Retail Credit Transfer: AePS Fund Transfer	RBI	Bank-led model allowing online interoperable financial transaction at PoS (micro-ATM) through business correspondent (BC) of any bank using Aadhaar authentication.
2.2	Retail Credit Transfer: ABPS		Channelising government subsidies and benefits to the intended beneficiaries using Aadhaar details
2.3	Debit Transfers and Direct Transfer: BHIM Aadhar Pay		Enables merchants to receive digital payments from customers over the counter through Aadhaar authentication
2.4	Cash withdrawal at micro-ATMs		Enables BCs (say a local kirana shop owner and will act as 'micro-ATM') to conduct instant transactions
4	Miscellaneous		
4.1	Money Supply: Currency with the public	RBI	Reflects the cash-based activity in informal sector enterprises and/or rural areas
4.2	MGNREGA: Work Demand Persons	MIS Reports	Indicates the labour demand conditions of the unskilled labourers in rural areas
4.3	IIP consumer non-durables	MOSPI	Production of food and FMCG items.
4.4	Housing loans	RBI	Loans disbursed by scheduled commercial banks adding to the construction GVA which has major share of unorganised sector activity.

Table 3: Conceptual framework of Informal Employment

Production units by type	Jobs by status in employment								
	Own-account worker		Employers		Contributing family workers	Employees		Members of producer cooperatives	
	Informal	Formal	Informal	Formal	Informal	Informal	Formal	Informal	Formal
Formal sector enterprises					1	2			
Informal sector enterprises	3		4		5	6	7	8	
Households	9					10			

Note: (i) Informal sector enterprises – as defined by the 15th ICLS (excluding households employing paid domestic workers); (ii) Households – Households producing goods exclusively for their own final use and households employing paid domestic workers; (iii) Cells shaded in dark grey refer to jobs, which, by definition, do not exist in the type of production unit in question, cells in light blue refer to formal jobs and un-shaded cells represent the various types of informal jobs; and (iv) Informal employment: Cells 1 to 6 and 8 to 10, employment in the informal sector: Cells 3 to 8 and informal employment outside the informal sector: Cells 1, 2, 9 and 10.

Source: 17th ICLS, reproduced in Annexure IV PLFS 2019-20.

*Agriculture in 2022-23: Kharif Performance and Rabi Outlook**

by Rishabh Kumar[^], Kirti Gupta[^] and N. Arun Vishnu Kumar[^]

The key drivers of agricultural crop acreage and production in India include rainfall and its temporal and spatial distribution during both the southwest and north east monsoon, availability of high-quality seeds, labour, fertilisers, pesticides, price expectations, minimum support prices (MSP) and procurement policy. This article analyses the impact of key factors on kharif production estimates for 2022-23 across states and an outlook for rabi. Although the cumulative southwest monsoon rainfall was above normal, its uneven temporal and spatial distribution and heavy rains towards the end of season could have adverse impact on the standing kharif crop production. However, late rains along with the delayed withdrawal ensured higher reservoir levels and better soil moisture conditions. An empirical analysis shows rains in September, higher MSP and forecast of normal northeast monsoon could enhance acreage and productivity of Rabi crops, particularly wheat.

Introduction

Economies across the globe are currently facing issues in meeting the demand for food, fertiliser, fodder, fuel and finance (5 Fs) emanating from three major challenges, viz., Covid, Climate and Conflict¹ (3 Cs) [Hendriks et al., 2022]. While Indian agriculture could overcome the Covid, others are posing hurdles for the sector. The last two years were favourable for agricultural production and food security led by mainly surplus labour (due to reverse migration), favourable monsoon and public food support scheme

specially Pradhan Mantri Garib Kalyan Yojana (PMGKAY) [Mukherjee et al., 2021; Economic Survey, 2021-22].

Farmers undertake agriculture activity in India during three seasons: (i) Sowing of *kharif* crops during the southwest monsoon (SWM) season (June-September) which are harvested during October-November; (ii) *Rabi* crops sown during the retreating SWM or the North-East Monsoon (NEM) season (November-January) and harvested in spring (February to May); and (iii) a short summer season in some regions (*zaid* crops).²

The key factors driving agricultural production in India include; (a) the cumulative amount of rainfall during both SWM and NEM and its temporal and spatial distribution; (b) access to irrigation; (c) timely availability of quality seeds (d) timely and adequate supply of chemical fertilisers and pesticides; (e) labour availability; (f) price expectations; and (g) MSP and procurement policies announced by the government. As in other South Asian economies, Indian agriculture is fraught with risks arising from any of these factors.

The monsoon plays a defining role in agriculture production. Accounting for nearly 75 per cent of the total rainfall received in the country, the SWM rains has been one of the most important factors driving the progress of Indian agriculture, both during *kharif* and *rabi* seasons. Although irrigation coverage of more than half of gross sown area under cultivation has been achieved, agriculture production continues to be sensitive to SWM rainfall (Kumar et al., 2019; Mukherjee et al., 2021). Since the sowing of *rabi* crops starts during or after the withdrawal of the SWM, the SWM rains have an indirect and the subsequent NEM

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* The views expressed in the article are those of the authors and do not necessarily represent the views of the Reserve Bank of India. The authors duly acknowledge the suggestions provided by Shri Rajib Das (Adviser), Shri Sarat Dhal (Director) and Smt. D. Suganthi (Research Officer).

¹ Ukraine crisis.

² Major *kharif* crops are rice, soyabean, pulses, oilseeds, and cotton. Wheat, rapeseed & mustard, barley, gram, and pulses are major *rabi* crops.

rains have a direct impact on *rabi* production as they determine the live water storage levels in the major reservoirs available for irrigation and soil moisture conditions. Consequently, despite threat posed by the climate change, the prospects for *rabi* crop production appear to be brighter due to above normal rains during September (a phenomenon observed during the past 3 years). The higher rains towards the end of the SWM are attributed to the prevalence of continued La Nina conditions for 3 years since 2020 (commonly known as the triple dip). Over the last two decades, *rabi* foodgrains production levels have gradually caught up with that of *kharif* production and have even surpassed the latter in some years, especially when reinforced by heavy rains in September. 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 (Patra *et al.*, 2021). On the other hand, the NEM rains mostly covers the Southern peninsula wherein *rabi* rice cultivation is predominant.

Earlier this year, *rabi* wheat (raised during October 2021 – March 2022) faced severe heat waves during harvest time (April-May 2022) leading to downward revision in production estimates. Further, elevated exports on account of global shortage of wheat due to Ukraine-Russia conflict worsened the domestic shortage. On the other hand, some of the key rice producing states faced significant shortage of SWM rainfall (June – September 2022). Further, unusually high rains during late September and early October 2022 caused damage to the standing *kharif* crops like rice, soyabean and cotton (Kumar, 2022). While estimates of lower supply of the two prime staple grains contributed to inflationary pressures, it also encouraged farmers for higher acreages in the ongoing *rabi* sowing season. The prospects of the upcoming *rabi* crops, however, are supported by adequate soil moisture conditions and higher reservoir levels (*vis-à-vis* last year and the 10-year average) in the key

producing states. The present study aims to dive deeper into key facets of agricultural production during the *kharif* (June to September 2022) at the regional level and provide some outlook for upcoming *rabi* (October 2022 to March 2023) season.

The next section of the study looks at the progress of the SWM rainfall in 2022. The review of trends in the wholesale prices of three major *kharif* crops - rice, arhar and soyabean for the preceding marketing season (October 2021 to September 2022) has been covered in the third section. The fourth section looks at the role of other potential factors (fertiliser, labour availability³ and procurement policies) on the performance of the agricultural sector. The status of area, production, and productivity (yield) of the agricultural crops for *kharif* 2022 has been presented in the fifth section. The outlook for *rabi* production has been covered in Section VI. The empirical exercise has been taken up in Section VII. The final section concludes with the major findings along with the policy implications.

II. Progress of South-West Monsoon

The India Meteorological Department (IMD) provides its first stage long range forecast (FSLRF) of SWM rainfall during mid-April, well in advance of the commencement of the rains as well as the sowing season, to facilitate crop planning for the *kharif* season. In 2022, in line with IMD's forecast, the SWM landed on the Indian mainland on May 29, 2022 (2 days prior to its normal date, *i.e.*, June 01, 2022). The initial rainfall forecast was 99 per cent of Long Period Average (LPA) rainfall with a model error of +/- 5 per cent (Table 1). The revised assessment as on May 31, 2022, upgraded the forecast to 103 per cent of LPA (with a model error for +/- 4 per cent). The cumulative rainfall at the end of SWM season (as on September 30, 2022), stood at an above normal level of 925.0 mm.

³ Since the data for labour usage in agriculture is not available on real time basis, data on demand for jobs under Mahatma Gandhi National Rural Employment Guarantee Scheme has been used in this article as its proxy.

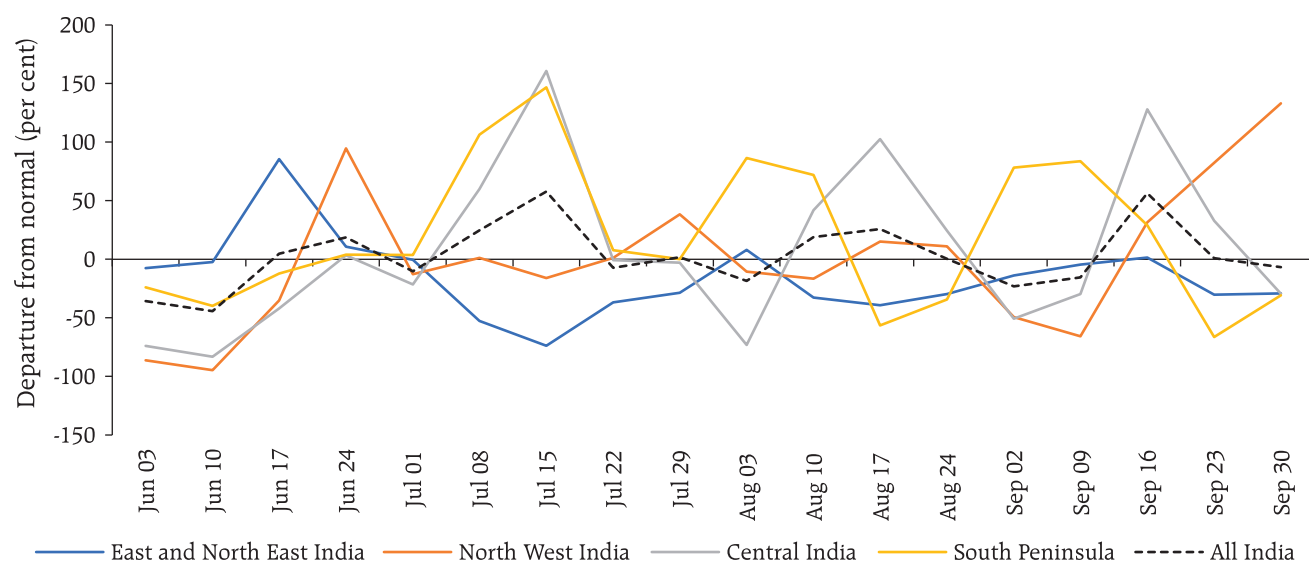
Table 1: Forecast *vis a vis* Progress of Southwest Monsoon in 2022

Forecast Date	Region	Period	Forecast (per cent of LPA)	Actual Rainfall (per cent of LPA)
April 14	All India	June to September	Normal (99 +/-5% of LPA)	106
May 31	All India	June to September	Normal (103 +/-4%)	106
	Northwest India	June to September	Normal (92-108%)	101
	Central India	June to September	Above Normal (> 106%)	119
	Northeast India	June to September	Normal (96-106%)	82
	South Peninsula	June to September	Above Normal (> 106%)	112
	Monsoon Core Zone	June to September	Above Normal (> 106%)	120
June 01	All India	June	Normal (92-108%)	92
July 01	All India	July	Normal (94-106%)	117
August 01	All India	August	Normal (94-106%)	103
		August-September	Normal (94-106%)	105
September 01	All India	September	Above Normal (>91-109%)	108

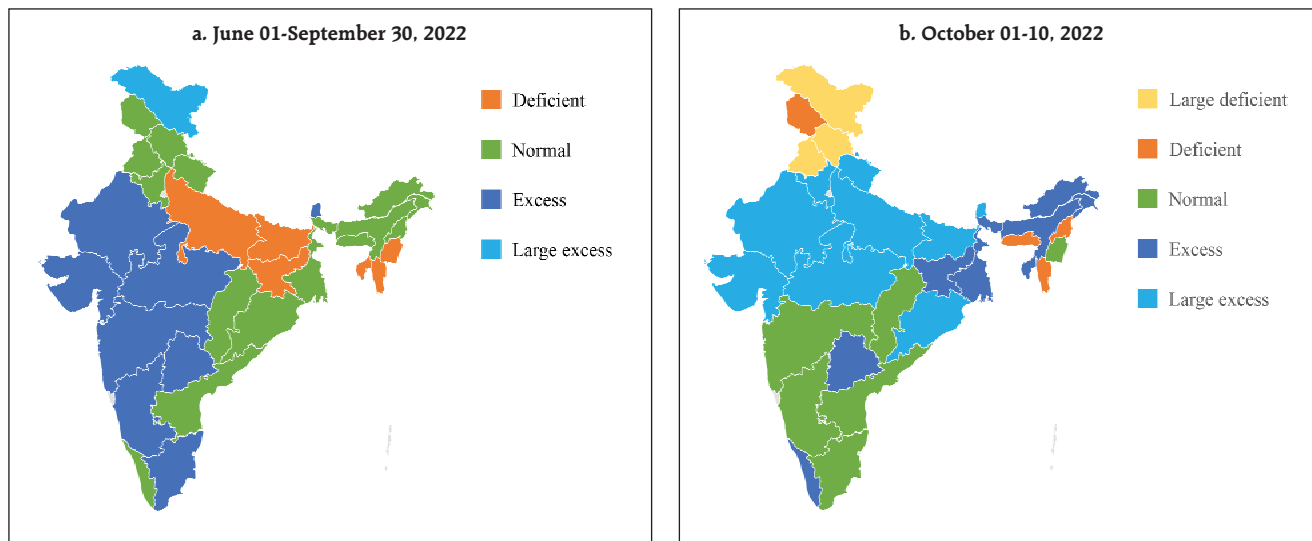
Source: India Meteorological Department (IMD).

Notwithstanding the average rainfall being more than the LPA, its progress varied across regions (Chart 1 and 2a). While rains in the Northwest India hovered around normal benchmark, the Central India and the South Peninsula received episodes of excessive rains during the middle as well as the end of the season rendering the standing crops vulnerable to damage. The East and North East Indian regions faced rainfall deficit during most of July and August, the crucial months for the *kharif*

sowing. Notably, states like Bihar, Uttar Pradesh, Jharkhand and West Bengal faced a deficit of more than 20 per cent as compared to the normal, reason being ineffective low-pressure systems over the Bay of Bengal and a southward shift of the east-west monsoon trough (IMD, 2022). As regards the monsoon core zone (which consists of most of the rain-fed agriculture regions as defined by the IMD), the rainfall received was sizably above the normal (20 per cent above LPA).

Chart 1: Weekly Progress of SWM Rainfall

Source: IMD.

Chart 2: Cumulative Rainfall Status

Source: IMD.

While the withdrawal of SWM started around September 20, 2022, but it ended on October 23, 2022. The slow withdrawal was due to cyclonic disturbances in the Bay of Bengal. As a result, the 52 per cent of the 36 meteorological subdivisions received above normal rainfall (October 1-10, 2022). States like Uttar Pradesh, Uttarakhand, Haryana, Rajasthan, Madhya Pradesh, Odisha, Gujarat, Telangana and Andhra Pradesh, comprising of around 47 per cent of the all-India *kharif* acreage, received very heavy down pour (29 per cent to 683 per cent above LPA) [Chart 2b]. The continuous heavy rains may potentially damage standing crops and cause delay in sowing of upcoming *rabi* crops (Bhushan *et al.*, 2015; Anonymous, 2019; Jain and Madaan, 2019; Kumar, 2022).

III. Price Situation during the *Kharif* Marketing Season (Oct 2021-Sept 2022)

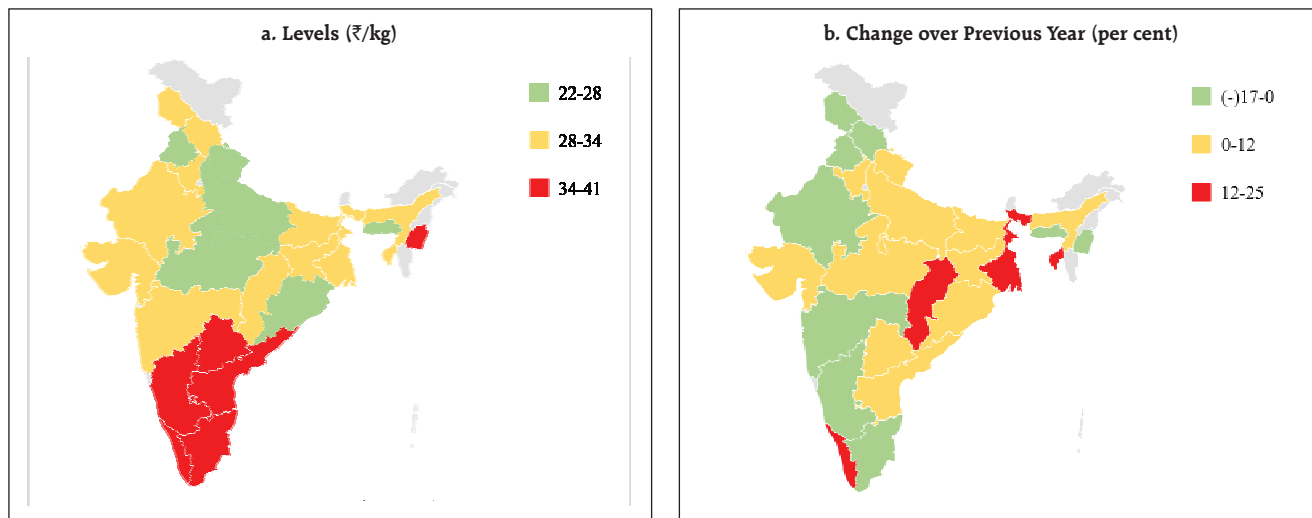
Empirical evidence shows that prices play a key role in the farmers' decision on the allocation of acreage to various crops during the season (Gulati and Sharma, 1990; Townsend 1999; Haile *et al.*, 2015). The prevailing prices prior to sowing period have substantial impact over the farmers price expectation (Mythili, 2006; Magrini *et al.*, 2017). To understand

the price expectation with respect to the *kharif* (2022) season, the wholesale prices of three major crops, namely rice, arhar and soyabean are presented in this section.

Rice

As per the usual trend, the average wholesale prices of rice showed wide, but increasing variations across northern and southern parts of the country. The average prices in the southern states remained at around ₹40/kg against the country average of around ₹31/kg during October 2021 to September 2022 (Chart 3a). The year-on-year (y-o-y) change was the highest in case of Chhattisgarh (24.3 per cent) [Chart 3b]. Among the major rice producing states, only Tamil Nadu (-2.6 per cent) and Punjab (-4.8 per cent) recorded decline in prices. Post the Ukraine crisis, rice export has risen substantially, thus, aggravating the price pressures in all major producer states⁴. This has further been fueled by the poor monsoon rains in key growing regions of eastern and northern India. The

⁴ Although the export of broken rice has been restricted and that of other non-basmati rice (except parboiled rice) has been levied with a duty of 20 per cent, the sown area had already reached near normal (5 year average) acreage for the season before the implementation of the policy.

Chart 3: Statewise Average Wholesale Price of Rice

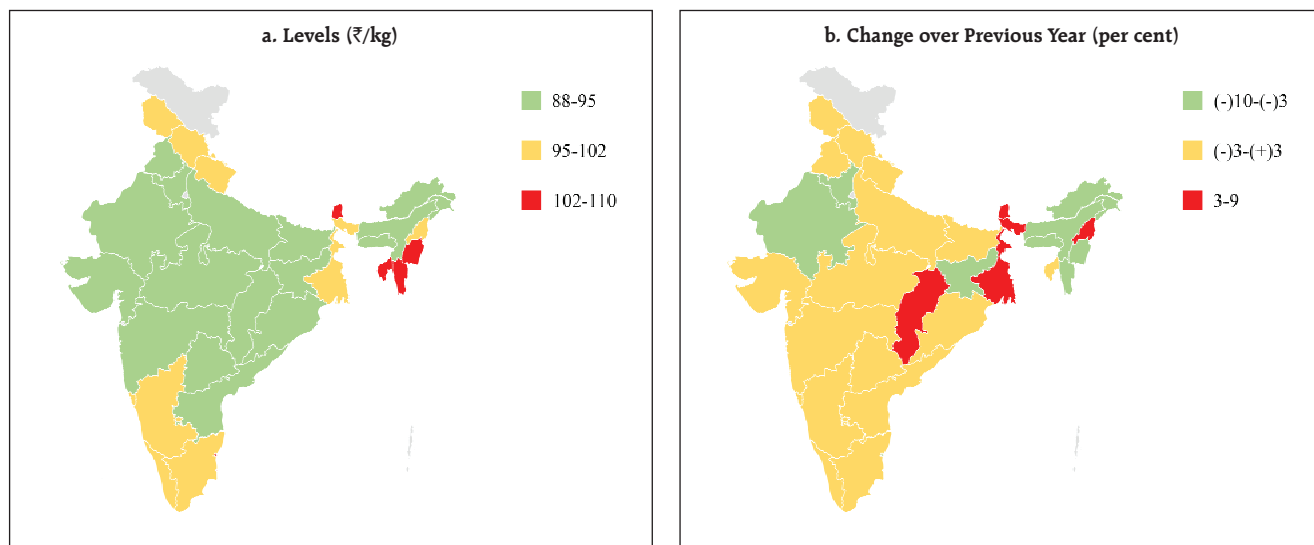
Note: Average wholesale price is from October 2021 to September 2022.

Source: Department of Consumer Affairs (DCA).

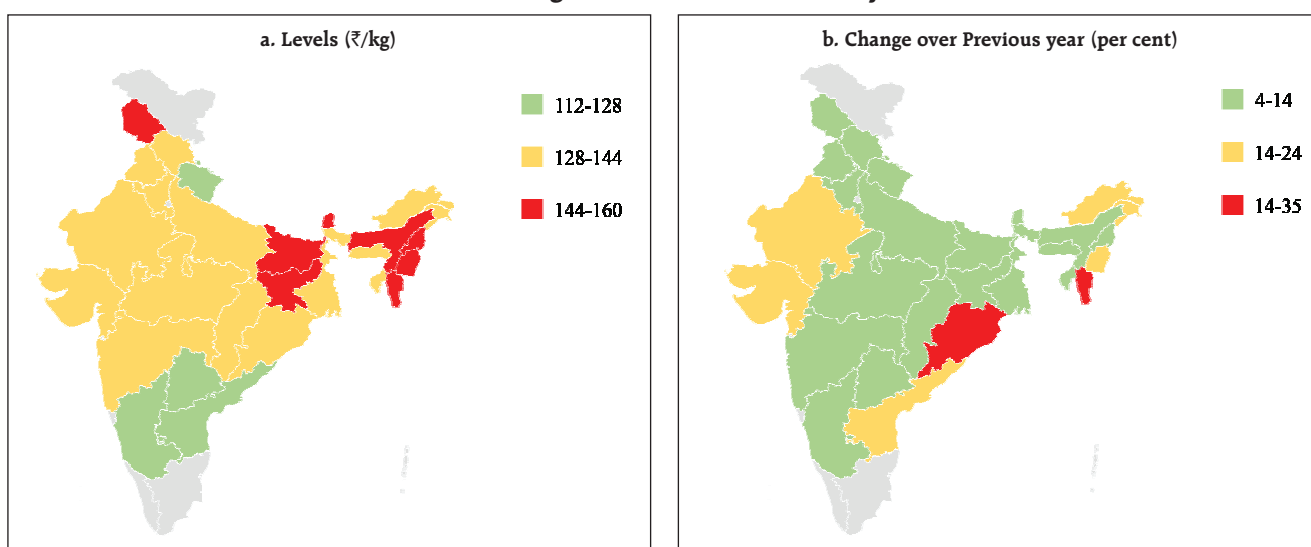
increasing price pressures on wheat following the war and due to declining stocks domestically appears to get transmitted into rice prices *via* its substitution by rice under the revised PMGKAY (RBI, 2022). Since March 2022, the average prices, in these states, varied widely in the range of 0.1 per cent (Tamil Nadu) to 17.5 per cent (West Bengal) on y-o-y basis indicating wider variations across states.

Arhar/Tur

As regards arhar, the predominant *kharif* pulse crop, prices remained largely muted barring some of the northeastern states recording lower prices than the national average of ₹96/kg (Chart 4a). Amongst major producers, the y-o-y growth remained negative in major producer states like Karnataka, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, and

Chart 4: Average Wholesale Prices of Arhar

Source: DCA.

Chart 5: Average Wholesale Prices of Soyabean

Source: DCA.

Telangana except for Maharashtra (Chart 4b). As a result of the lower prices, it is likely that the farmers could have switched to other crops in place of arhar.

Soyabean

The price of the key *kharif* oilseed, soyabean remained at around ₹138/kg (national average) [Chart 5a]. The prices remained comparatively lower in the central and southern states as compared to the others. The demand for soyabean for both edible oil and oil meals increased substantially after the Ukraine crisis (Nasir, *et al.*, 2022). As a result, the average prices for the *kharif* marketing season showed y-o-y increase in all the states (Chart 5b). While Odisha and Mizoram recorded the highest jump, the rest of the country including the major producer states like Madhya Pradesh, Maharashtra and Gujarat recorded an increase in the range of 4 per cent to 14 per cent.

IV. Other Factors

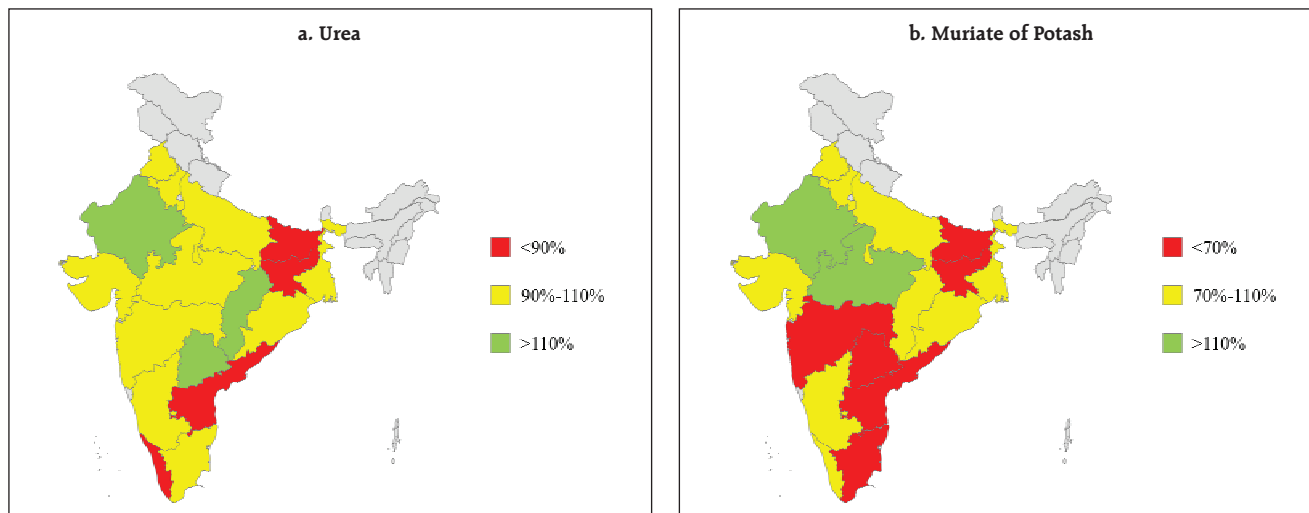
Fertilisers

The timely and adequate supply of chemical fertilisers is essential for crop production. Anticipation of fertiliser shortage after the Ukraine conflict and the consequent rise in fertiliser subsidy from budgeted

₹1.05 lakh crore by another ₹1.10 lakh crore going to a record level of around ₹2-2.5 lakh crore for the fiscal year 2022-23 has added fiscal strain but proven to be of significance to prevent the cost of cultivation from rising sharply (The Hindu, 2022; GoI, 2022). While urea is domestically produced, India is dependent on imports for Diammonium phosphate (DAP) and Muriate of Potash (MOP). The supply of urea (most used fertiliser) remained comfortable in general whereas MOP remained in shortage (Chart 6a and 6b). The allocation of fertilisers across the states appears to be used in proportion to the amount of rainfall received. Specifically, in states like Rajasthan, Chhattisgarh, Madhya Pradesh and Gujarat, the urea supply remained higher than the requirement.

Demand for jobs under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)

The demand for jobs under the rural employment scheme, MGNREGS, declined during the *kharif* sowing months on y-o-y basis. While some part of this decline could be a part of overall economic recovery and increasing job opportunities in the rural non-farm as well as in the urban sector, a major portion of decline could be due to higher demand for

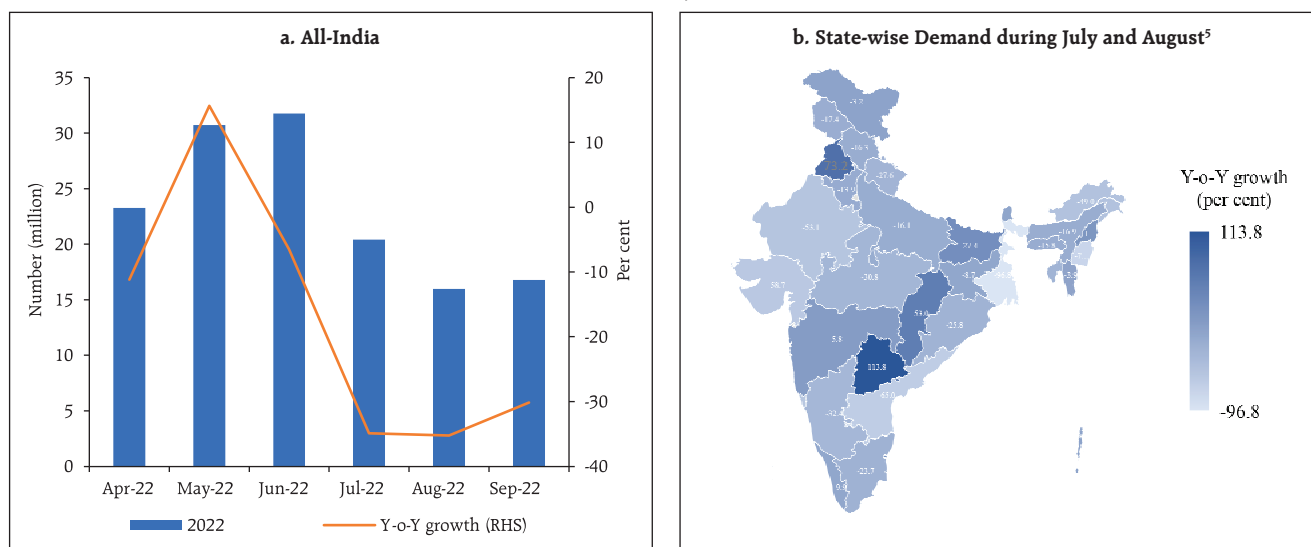
Chart 6: Average Supply of Fertilisers

Notes: Supply of fertiliser = Availability of fertiliser / Requirement of fertiliser * 100. Period: June-August 2022.

Sources: Department of Fertilisers; Compiled from Industry Outlook, CMIE.

labour in the agriculture sector (Chart 7a). State-wise representation shows that Telangana recorded the highest increase (113.8 per cent) in the demand for job during the peak sowing months of July and August (Chart 7b). The decline in the area coverage under major crops of the state reveals muted agricultural

activity leading to higher demand for job under the scheme. The significant increase in job demand under MGNREGS in Bihar and Chhattisgarh also corroborates the subdued agriculture activity due to muted progress of monsoon rainfall. Apart from these states, Punjab and Maharashtra have also recorded higher growth in

Chart 7: Demand for Jobs in MGNREGS

Source: Ministry of Rural Development.

⁵ July and August are the peak sowing months during the *kharif* season.

demand for MGNREGS jobs because these states are often destination of majority of the migrant labourers (Economic Survey 2021-22). On the contrary, other states with lower *kharif* acreage like Uttar Pradesh, Jharkhand and West Bengal reported lower demand despite poor monsoon and agricultural progress, which possibly indicates that the workers switched in the non-agricultural sectors either within the state or migrated outside.

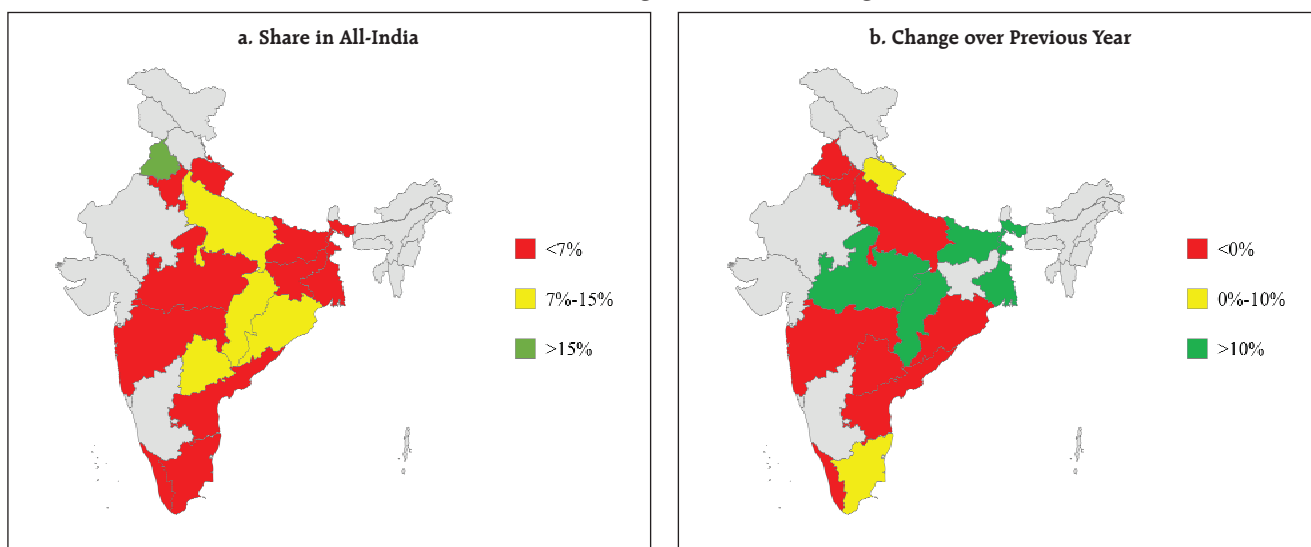
Procurement and Stocks

Prior to the start of sowing activity, the Union Government announces minimum support prices (MSP) for the crops based on the cost of production as well as other demand and supply factors as recommended by the Commission on Agricultural Costs and Prices (CACP). When backed by sufficient procurement by the Food Corporation of India (FCI), National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED) and other Government agencies, the MSP is observed to influence the domestic prices and shift in the cropping patterns significantly (NITI Ayog, 2016; Das, 2020). For *kharif* season, generally, MSP for 14 major crops is announced.

The MSPs announced for the *kharif* season crops in 2022-23 were higher in the range of 4.4 – 8.9 per cent with an average of 6.1 per cent over the previous year. The MSP for paddy was higher by 5.2 per cent as compared to the previous year. The highest growth of MSP compared to last year was seen in the case of soyabean (8.9 per cent) followed by jowar (8.5 per cent), sesamum (7.2 per cent) and tur (4.8 per cent). On the other hand, the lowest growth is recorded in the case of bajra (4.4 per cent) followed by urad and maize. Overall, the growth numbers are higher than previous year. Increase in MSP announced for *kharif* season 2022-23 ensures a return of at least 50 per cent over the cost of production (including paid-out expenditure plus imputed cost of the family labour) across all the crops.

The procurement operations are majorly dominated by rice during the *kharif* marketing season (KMS). The procurement share of rice during KMS 2021-22 was highest in Punjab, followed by Telangana and Chhattisgarh (Chart 8a). The higher y-o-y growth was observed in Chhattisgarh, West Bengal, Bihar and Madhya Pradesh. However, due to deficient rains in these states (except Madhya

Chart 8. Rice Procurement during *Kharif* Marketing Season (2021-22)



Source: Food Corporation of India.

Pradesh) [Chart 8b], the expectation for remunerative prices emanating from increased procurement could not translate into higher acreages (discussed in the subsequent section).

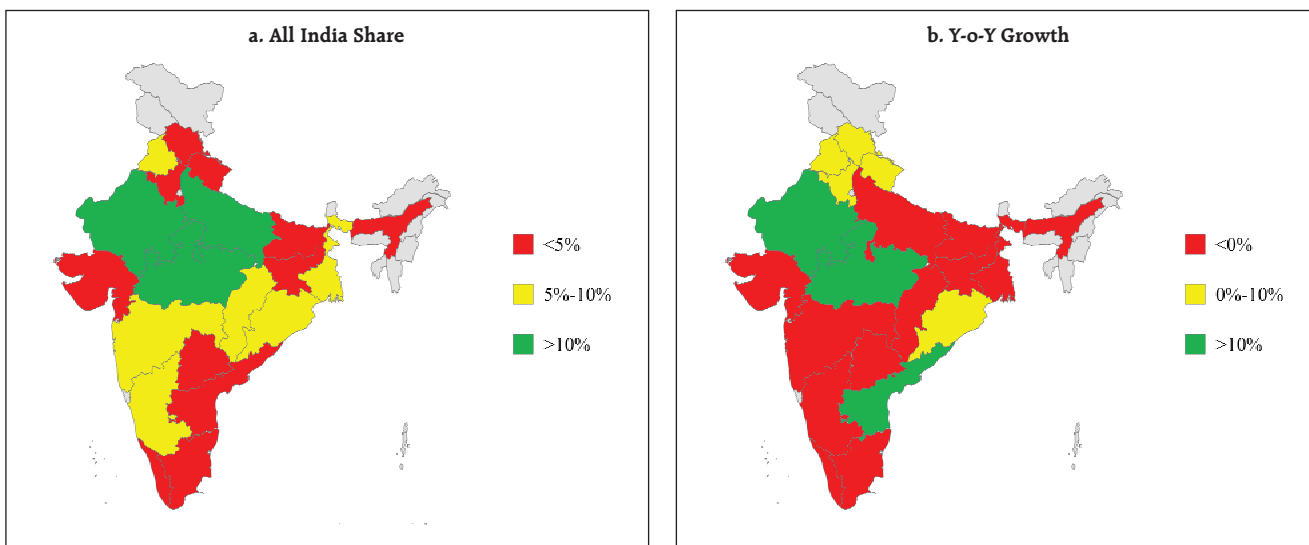
V. *Kharif* Production (2022-23)

The production of *kharif* foodgrains in 2022-23, as per the First Advance Estimates (AE), is estimated at 149.9 million tonnes, 3.9 per cent lower than *kharif* foodgrains production of 156.0 million tonnes in 2021-22 (4th AE). Despite deficient rains, Uttar Pradesh recorded highest share in the overall food grain production followed by Madhya Pradesh (Chart 9a). While Rajasthan (25.5 per cent), followed by Telangana (13.6 per cent), recorded highest growth in the foodgrain production mainly on account of adequate rainfall. However, the y-o-y growth was negative in Bihar, Uttar Pradesh, Jharkhand and Tamil Nadu (Chart 9b). The share of area under the *kharif* crops has been highest in Rajasthan, followed by Uttar Pradesh and Madhya Pradesh (Chart 10a). In terms of productivity of foodgrains, Punjab is at the top followed by Tamil Nadu and Haryana (Chart 10b).

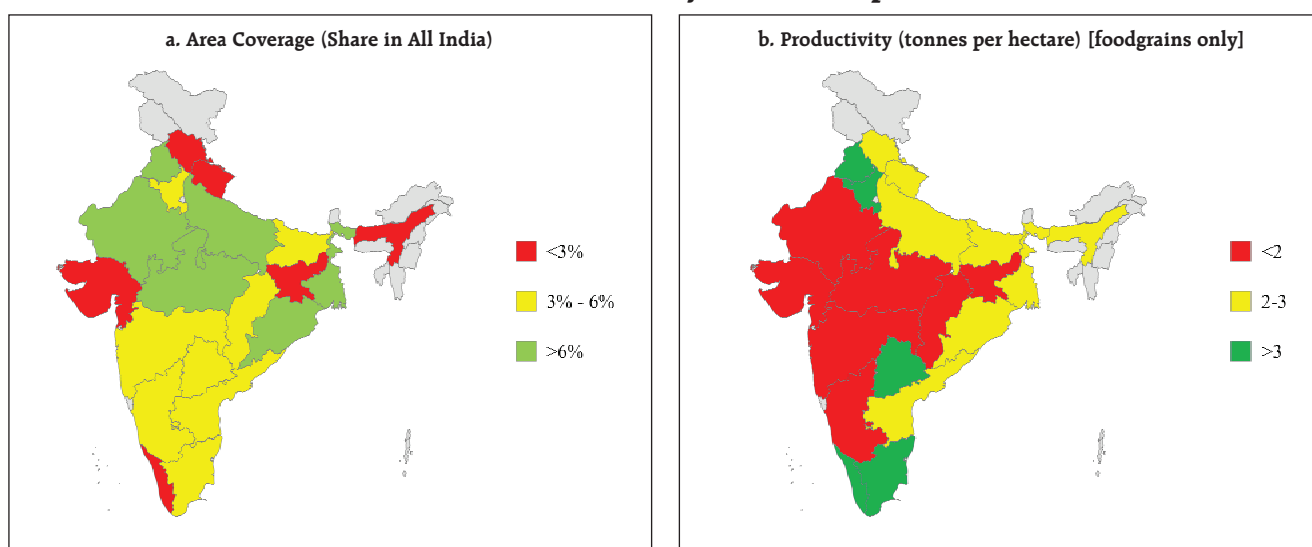
Kharif rice, which accounts for 86 per cent of annual rice production, estimated at 105.0 million tonnes is lower by 6.1 per cent over the 4th AE of 2021-22 on account of lower area sown as well as lower yield due to significant rainfall deficit in the major producing states like West Bengal, Uttar Pradesh, Chhattisgarh, Bihar and Assam (Table 2). However, some of the non-traditional rice producing states, namely Madhya Pradesh, Gujarat and Rajasthan, recorded significant jump in the production numbers which is possibly due to surplus rainfall received in these regions along with proportional allocation of fertilisers. In addition, a significant jump in the acreage in Madhya Pradesh could also be attributed to significant rise in the public procurement (23 per cent on y-o-y basis).

Production of *kharif* pulses is expected at the same level as in the previous year with lower production in major pulse crops such as tur (-10.4 per cent) and urad (-5.2 per cent) compensated by other pulses. The increased acreage of pulses in Bihar, Assam, Uttar Pradesh and West Bengal reveals that the pulses (which are less water intensive crops) were

Chart 9: Production of *Kharif* Foodgrains (2022-23)



Source: MoAFW.

Chart 10: Area and Productivity of Kharif Crops (2022-23)

Source: MoAFW.

substituted for the paddy in the advent of deficient rains. At all-India level, the acreage under pulses has

been 6.3 per cent lower than previous year which could be attributed to y-o-y decline in the prices.

Table 2: Agriculture Production (Kharif 2022-23): First AE (2022-23) over Fourth AE (2021-22)⁶

(y-o-y growth, per cent)

State	Rice			Coarse Cereals			Pulses			Oilseeds			Sugarcane			Cotton		
	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y
Andhra Pradesh	16.2	5.0	10.6	10.3	12.5	26.1	34.1	-2.6	37.7	53.9	-14.5	80.1	-1.8	-2.1	0.4	4.5	8.7	-3.8
Assam	-1.2	0.5	-1.7	6.8	4.8	1.9	627.0	850.0	-23.5	-4.4	-5.0	0.7	2.1	0.0	2.1	0.0	0.0	0.0
Bihar	-13.6	-5.8	-8.3	3.5	10.5	-6.3	18.8	16.0	2.4	26.4	-1.9	28.9	4.3	3.6	0.7	NA	NA	NA
Chhattisgarh	2.5	8.9	-10.4	-6.7	-3.9	-2.9	-9.7	2.7	-12.1	-13.3	-9.5	-4.3	21.7	25.1	-2.7	-19.9	-10.0	-10.9
Gujarat	5.1	3.9	1.2	-51.0	-36.8	-22.5	-18.0	-23.7	7.4	-12.4	-14.4	2.9	-4.2	4.1	-2.9	22.7	1.2	10.4
Haryana	2.9	3.0	-0.1	-8.9	-7.8	-1.2	-23.8	-24.6	1.0	-40.3	-45.6	9.8	12.2	8.6	3.3	30.8	2.1	28.1
Himachal Pradesh	0.0	0.0	0.0	5.1	0.0	5.1	-29.3	-15.0	-16.8	9.2	0.0	9.1	0.4	-0.2	0.6	NA	NA	NA
Jharkhand	-58.3	-49.0	-18.2	-28.3	-26.3	-2.8	-28.0	-25.5	-3.3	-17.5	-22.2	6.0	NA	NA	NA	NA	NA	NA
Karnataka	-3.7	-6.2	2.6	0.6	6.4	6.2	3.6	-5.7	12.0	4.9	-1.8	6.8	-2.1	0.0	-2.1	7.9	6.6	1.2
Kerala	-70.2	-66.5	-11.2	-60.5	-72.7	44.8	-93.8	-94.6	-25.7	-63.0	-89.6	256.6	-71.6	-70.0	-5.3	NA	NA	NA
Madhya Pradesh	46.0	52.7	-4.3	11.7	12.9	-1.0	6.8	16.6	16.6	-8.4	1.7	4.6	1.0	-7.5	-7.5	0.0	7.0	7.0
Maharashtra	-5.7	-5.0	-0.8	4.7	11.3	18.0	-25.8	15.9	-11.8	-6.6	2.3	-8.6	29.5	20.7	7.2	12.8	6.2	6.2
Odisha	5.9	0.4	5.5	-11.5	-4.2	-7.7	23.7	12.6	9.8	5.0	23.6	15.1	-2.2	1.7	-3.9	8.8	3.6	3.1
Punjab	3.8	5.5	-1.6	-11.4	-8.3	-3.3	-19.5	-23.5	5.3	102.9	-19.4	151.9	8.3	7.7	0.5	42.5	-3.9	48.4
Rajasthan	32.3	17.7	12.4	26.6	14.2	10.9	37.7	-12.9	58.2	27.2	-1.1	28.7	6.2	12.6	-5.7	9.3	-9.6	21.0
Tamilnadu	-55.2	-55.6	1.0	1.4	6.2	5.2	19.5	20.2	-0.6	1.4	-9.7	26.3	-22.5	-21.1	-1.8	-48.0	-46.7	-2.4
Telangana	-1.9	-0.6	-1.3	-23.2	-16.2	-8.4	-26.8	-28.6	2.6	-4.9	-1.2	1.1	2.7	25.0	17.9	-12.2	4.3	-16.3
Uttar Pradesh	-17.8	1.8	-19.3	-9.5	-1.7	-8.0	-6.1	2.7	-8.6	4.5	2.9	1.5	-0.4	0.1	-0.3	-24.4	-25.0	0.8
Uttarakhand	1.7	1.7	0.0	0.5	0.6	-0.2	-4.4	-4.7	0.2	-1.7	0.0	-1.7	127.4	109.1	8.7	NA	NA	NA
West Bengal	-4.8	-0.4	-4.4	-6.9	-11.2	4.8	1.7	7.8	8.8	-12.1	-3.5	-9.0	7.6	0.1	7.5	NA	NA	NA
Others	-5.2	-1.5	-3.7	2.6	2.2	0.4	10.4	13.9	28.2	-30.3	-10.4	-22.2	9.5	9.9	-0.4	9.4	5.0	4.2
All-India	-6.1	-0.9	-5.2	1.8	0.6	1.2	0.1	6.3	6.7	3.3	4.4	3.2	7.7	6.2	1.5	9.6	5.0	4.4

NA: Data unavailable.

P stands for production; A refers to Area and Y means Yield.

Red colour denotes the negative values and blue denotes the positive values. The length of the data bars reflects the comparative growth among production, area and yield.

Source: MoAFW.

⁶ This table provides the comparison of first advance estimates (AE) of 2022-23 with the latest available data for 2021 which is based on 4th AE. However, the comparison of first AEs of the both the years has also been provided in Annex I for reference.

Production of *kharif* oilseeds is estimated to be lower by 1.3 per cent over last year driven by lower acreage in the major producer states, mainly Madhya Pradesh, Gujarat and Andhra Pradesh. Groundnut and soyabean production are expected to be less than that of last year by 0.1 per cent and 0.8 per cent, respectively. The decline in the acreage of oilseeds in these states appears to emanate from the increased cropping of cotton in anticipation of higher prices (Dave, 2022). While most of the states recorded degrowth in the oilseed acreage, rise in case of Uttar Pradesh and Odisha appears to be driven by the change in cropping pattern away from rice. The growth in the yield of the oilseeds has been higher than that of the area in most of the states. Among other commercial crops, production of cotton and sugarcane (record level) are estimated to be higher by 9.6 per cent and 7.7 per cent, respectively, over last year's production. Among major sugarcane producing states, Maharashtra recorded an increase of 29.5 per cent due to ample rains, while the production declined in Uttar Pradesh and Tamil Nadu. All the major cotton producing states recorded jump in the

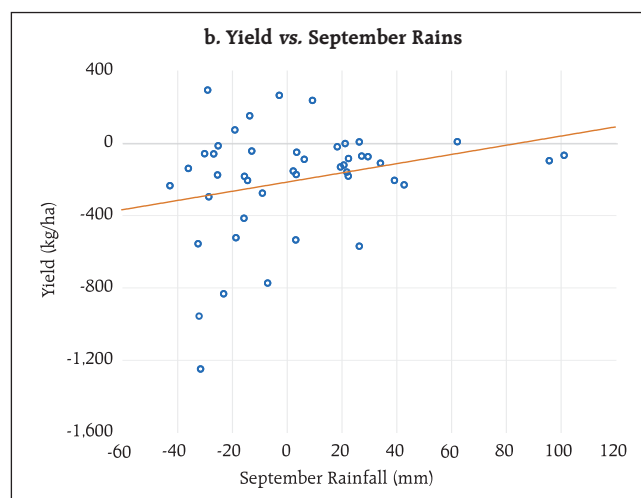
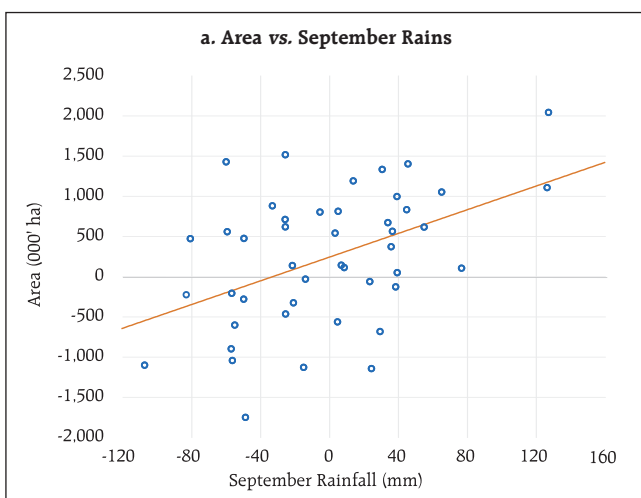
production majorly driven by both growth in area as well as yield.

VI. Outlook for *Rabi* Production (October 2022-March 2023)

The harvesting of *kharif* crops is generally followed by the sowing of *rabi* (winter) crops from October. On average, wheat (48 per cent), gram (chana) [23.7 per cent], and rapeseed & mustard (10 per cent) comprise the major share in overall *rabi* acreage.

As regards the price, wheat had highest inflation owing to the production loss due to the occurrence of prolonged heat waves during the harvesting stage as well as the reduction in global wheat supply in the wake of geopolitical conflict. With domestic open market prices prevailing above MSP, the public procurement of wheat was lower by 56.6 per cent as compared to the previous year. Being exclusively a *rabi* crop, the new harvest of wheat would be available from April 2023. Hence, wheat stock with the government continues to fall with offloading under various food support schemes and is thus, pulling up the prices throughout the ongoing *rabi* marketing season⁷ (Chart 12).

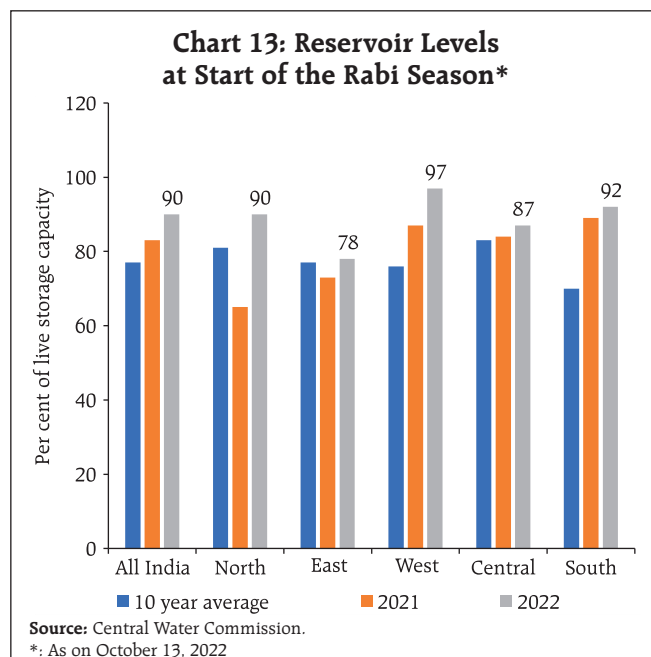
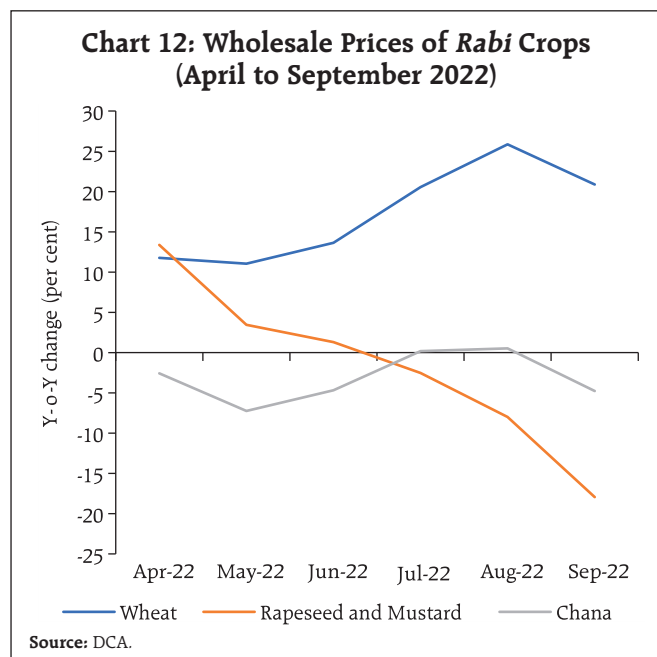
Chart 11: Wheat Production vs September Rains (1975-76 to 2021-22)



The values used are the first difference of the respective variables.
The series on yield has been detrended.

Sources: MoAFW; and MoSPI.

⁷ *Rabi* marketing season (RMS) starts in April and continues till March. However, the government procurement of wheat, generally, ends by June or July.



Contrastingly, the rapeseed and mustard recorded continuous decline in the y-o-y growth of wholesale prices (negative growth since mid-June) driven by record production during previous year and sufficient import of palm oil. Further, with higher inventories of the palm oil in Malaysia, one of the major global producer and exporter, India is expected to import sufficient amount of the same (Business Line, 2022). Until the importing countries significantly fasten up the import of palm oil in the wake of depreciating currencies, the price of rapeseed & mustard is not expected to record significant rise. The changes in the gram prices have also remained negative most part of the RMS (2022-23). Going by the price prospects, the acreage under wheat is expected to remain higher as compared to the previous year and could also replace some area under the other *rabi* crops. This is also likely to be supported by sufficient reservoir levels since the beginning of the season, aided by above normal rains during September and October (Chart 13). In addition, the IMD has forecasted the NEM rains to be normal.

Apart from brightening the prospects for *rabi* rice in southern states, the higher NEM rains also

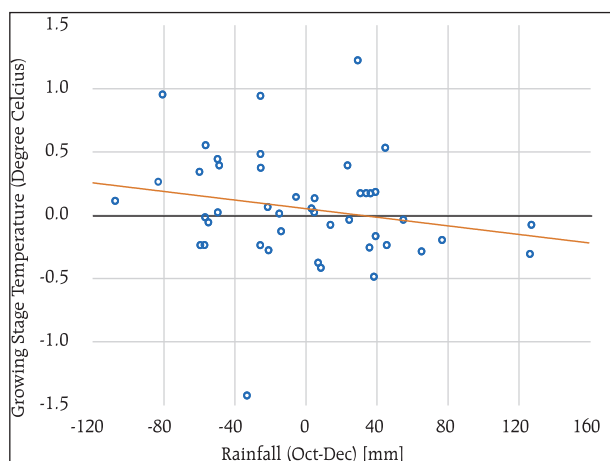
appears to help in cooling down the temperature across the country, which is suitable for *rabi* crops, particularly wheat⁸ (Chart 14). It is also evident from the association between temperature and productivity that the lower growth stage temperature (GST) [October to December] favours higher productivity⁹ (Chart 15).

VII. Empirical Analysis

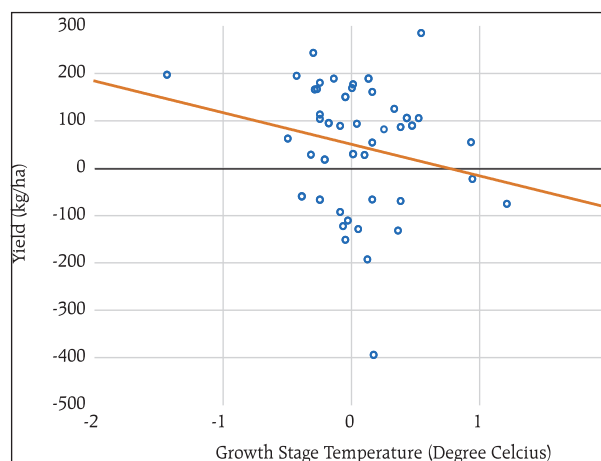
As illustrated above, heavy rains during September 2022 created congenial soil moisture conditions as well as adequate reservoir levels, which in turn is expected to augur well for the *rabi* sowing (Chart 13a). Using national level data from 1975-76 to 2021-22, we attempt to empirically test the impact of September

⁸ As per the IMD's press release on monthly forecast for winter temperatures (dated December 01, 2022), minimum temperatures (during December) are most likely to be below normal over most parts of peninsular India, many parts of Central India and some parts of northwest India. On the other hand, normal to above normal minimum temperatures are most likely over most parts of northeast India and some parts of east and northwest India.

⁹ Ali *et al.* (2017) and Kuriachen *et al.* (2022) provide empirical evidence of the impact of increased temperature on wheat productivity for Indian subcontinent.

Chart 14. North East Monsoon and Growing Stage Temperature (1975-76-2021-22)

Note: The values used are the first difference of the respective variables.
Sources: MoAFW and MoSPI.

Chart 15 Growing Stage Temperature and Wheat Yield (1975-76-2021-22)

Note: The values used are the first difference of the respective variables.
Sources: MoAFW and MoSPI.

rains on wheat acreage in the long run using the following equation.

$$Area_t = \alpha + \beta_1 September Rains_t + \beta_2 MSP_t + \beta_3 Wholesale Prices_t + \varepsilon_t$$

The descriptive statistics of the variables and expected sign from the above regression are presented in Table 3.

The results of the stationarity test performed using Augmented Dickey-Fuller test (ADF) are presented in

Table 3. Descriptive Statistics of the variables used in the analysis

Variable	Unit	Mean	SD	JB Statistic	Expected Sign
Area	000' ha	26057.5	3096.488	2.320	NA
WPI (pre sowing)	Index (Base: 2011)	59.7	47.701	5.238*	+
MSP	₹/qtl (Base: 2011)	653.0	545.963	6.006**	+
Rainfall (September)	mm	167.9	33.917	4.0470	+
Dummy Variable	1 if above normal rainfall, else 0	NA	NA	NA	+

****, *** and * denote the level of significance at 1%, 5% and 10%, respectively.

Source: Authors' estimates.

Table 4. This test is performed to determine the order of integration of the variables. Except the rainfall data, which is stationary at levels, all other variables are stationary at the first difference.

As one variable is integrated of order I(0) and others at I(1), Autoregressive distributed lags (ARDL) procedure was employed for estimation. The variables were used in the log form. The ARDL bounds test for cointegration between the area and the other variables show that the F-statistic is higher than the upper bound critical value, confirming cointegration between variables and hence, the existence of a long-run relationship (Table 5).

Table 4. Augmented Dickey Fuller Test for Stationarity

	Level	First Difference
Area	-1.091	-8.372***
WPI (pre-sowing)	-0.891	-9.309***
MSP	2.954	-2.754***
Rainfall (September)	-8.073***	-6.442***

****, *** and * denote the level of significance at 1%, 5% and 10%, respectively.

Source: Authors' estimate.

Table 5: Determinants of wheat acreage: Results of ARDL (long run)

	Model 1		Model 2		Model 3		Model 4	
	Coeff.	SD	Coeff.	SD	Coeff.	SD	Coeff.	SD
September Rains (Levels)	0.121***	0.039	0.118***	0.039	-	-	-	-
September Rains (Dummy)	-	-	-	-	0.043**	0.017	0.042**	0.017
WPI (Pre sowing)	0.117***	0.007	-	-	0.116***	0.008	-	-
MSP	-	-	0.112***	0.007	-	-	0.111***	0.007
Intercept	9.116***	0.192	9.171***	0.194	9.721***	0.029	9.758***	0.027
Error Correction Term	-0.579***	0.078	-0.585***	0.081	-0.543***	0.080	-0.553***	0.083
DW Statistic	2.184		2.282		2.011		2.122	
Serial Correlation	0.606		1.296		0.130		0.283	
Heteroscedasticity	0.691		0.613		0.130		0.218	
Bound test for cointegration	12.682***		12.119***		10.720***		10.459***	

****, *** and * denote the level of significance at 1%, 5% and 10%, respectively.

Source: Authors' estimate.

The September rains appears to play a significant role in deciding the area to be sown under wheat. In addition to the soil moisture and reservoir levels for irrigation (both depicted by the September rains), price is also a key determinant of farmers' acreage response (Gandhi *et al.*, 2004; Mythili, 2006). Both the wholesale price index (pre sowing¹⁰) as well as the minimum support prices (MSPs) were found to have positive and significant impact on the wheat acreage. As regards the outlook for the ongoing rabi season 2022, all the three factors appear to augur well for the higher area under wheat production. The diagnostic tests, in terms of Breusch–Godfrey Serial Correlation test, Breusch-Pagan-Godfrey heteroskedasticity test, suggests the estimates are robust. The plot of the cumulative sum of squares (CUSUMSQ) of recursive residuals show that the results are stable at 5 per cent level of significance (Annex II, Chart A1).

VIII. Conclusion and Way Forward

The SWM rainfall in 2022 was above normal. However, its spatial and temporal distribution was uneven. As a result, though price, inputs and procurement policies are vital factors of production,

the quantitative and qualitative progress of SWM rains continues to play key role in the supply response (both area and productivity) of the *kharif* crops.

While both policy (MSP backed procurement) and market factors (export demand and declining stock) were likely to augur well for higher *kharif* rice production, it did not materialise on account of deficient rainfall in major producer states. This, in turn, nudged the farmers to shift towards region specific and remunerative alternate crops like pulses and oilseeds in these states. On the other hand, in the major pulses and oilseed producing states, cotton appears to have gained share in the overall acreage and production on account of higher price prospects. As the SWM ended, episodes of excess rains during September and October 2022 could lead to some damage of standing crops, the extent of which would likely be reported in the second advance estimates of agricultural production. Considering the sensitivity of *arhar* crop to heavy rain, water logging, lower production and lack of any substitute may spur price pressures if timely and adequate amount of import does not take place.

As regards the *rabi* production outlook, the prospects for wheat in 2023 looks bright in the backdrop of announcement of higher MSP, current

¹⁰ Pre sowing prices, here, are taken as average prices from April 01 (start of the *Rabi* marketing season) till September 30 (prior to the commencement of the sowing activities).

market prices ruling above MSP as well as soil moisture conditions and climatic factors supporting higher acreage and better yield. As on December 09, 2022, *rabi* crop sowing was 15.0 per cent higher over the previous year driven mainly by growth in acreage under wheat (25.4 per cent), gram (2.5 per cent) and rapeseed and mustard (8.9 per cent), respectively. However, the increasing incidences of heat waves across the globe would remain a possible downside risk until the final harvest is ready for sale (Kirkpatrick and Lewis, 2020).

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Annex I

Table A1: Agriculture Production (Kharif 2022-23): First AE (2022-23) over First AE (2021-22)

(y-o-y growth, per cent)

State	Rice			Coarse Cereals			Pulses			Oilseeds			Sugarcane			Cotton		
	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y	P	A	Y
Andhra Pradesh	-1.8	0.6	-2.4	8.2	4.0	4.0	5.4	6.4	-0.9	2.2	2.9	-0.6	-7.7	-8.0	0.4	-11.9	4.2	-15.4
Assam	-1.2	-1.0	-0.2	15.0	7.3	7.2	-7.0	-6.6	-0.4	-0.6	0.0	-0.6	0.4	0.0	0.4	1.1	0.0	1.1
Bihar	-8.4	-5.7	-2.9	-23.2	-8.6	-15.9	-13.2	-10.7	-2.8	-12.6	0.2	-12.8	-14.8	-1.8	-13.2	NA	NA	NA
Chhattisgarh	8.9	3.8	5.0	4.4	-1.4	5.8	-4.2	-1.5	-2.7	-19.6	-16.8	-3.4	29.4	33.8	-3.3	-13.6	-5.7	-8.4
Gujarat	6.3	2.5	3.7	-4.8	-0.3	-4.5	-21.2	-23.4	2.5	3.1	-10.8	0.4	30.4	27.3	2.3	13.4	12.5	0.8
Haryana	5.9	0.8	5.1	11.8	11.6	0.2	-37.3	-38.7	2.3	-53.4	-52.3	-2.4	8.3	4.4	3.7	-15.8	-6.6	-9.8
Himachal Pradesh	-21.4	-4.8	-18.0	6.4	0.4	6.0	73.1	19.0	45.5	-12.7	42.5	-64.0	-24.5	-4.6	-20.9	NA	NA	NA
Jharkhand	-58.9	-56.9	-4.6	-27.6	-24.3	-4.4	-20.4	-19.8	-0.7	-9.7	-8.8	-1.1	NA	NA	NA	NA	NA	NA
Karnataka	8.1	7.3	0.8	20.9	17.9	2.6	11.7	7.2	-5.2	-5.9	-8.5	2.9	23.4	18.2	4.4	22.1	11.6	9.3
Kerala	-65.1	-65.6	1.2	85.7	-17.1	124.0	-62.7	-65.5	0.0	31.5	22.6	7.3	0.8	1.1	-0.3	NA	NA	NA
Madhya Pradesh	29.5	27.8	1.4	1.8	-5.7	7.9	-4.7	9.0	-1.1	-4.1	-6.5	2.5	-12.3	-18.9	8.1	-20.9	-2.8	-18.7
Maharashtra	-12.2	-3.3	-9.2	40.0	-9.1	54.0	-8.3	-15.4	8.4	8.2	4.3	3.7	29.1	20.8	6.9	-10.7	6.6	-10.2
Odisha	13.4	0.0	13.3	20.2	17.0	2.7	5.1	11.0	-5.3	30.4	16.8	11.6	2.3	2.4	-0.1	10.1	2.0	2.1
Punjab	10.9	9.2	1.6	-19.2	-22.4	4.2	-16.3	-11.4	-5.6	2.7	-6.5	9.7	3.7	3.1	0.6	-32.6	20.7	-15.0
Rajasthan	17.4	21.3	-3.2	18.9	17.0	1.6	-17.4	2.3	-19.6	13.8	6.0	7.3	19.5	19.0	0.4	4.4	-3.5	8.2
Tamilnadu	-39.4	-45.0	10.3	0.6	2.5	3.0	13.1	26.7	-10.7	8.9	0.5	8.3	15.4	14.3	1.0	16.0	6.2	9.2
Telangana	41.6	39.6	1.4	-11.7	0.2	-11.9	-45.3	-37.9	-11.9	7.2	5.2	1.9	39.2	16.7	19.3	-19.2	-3.4	-16.3
Uttar Pradesh	-23.0	-1.7	-21.7	-14.3	2.1	-16.3	-14.4	1.0	-16.0	-35.4	-3.8	-32.8	-1.9	-1.4	-0.5	0.8	0.0	0.8
Uttarakhand	-8.8	-2.9	-6.1	-5.8	-8.8	3.3	13.8	0.0	13.8	3.6	-4.5	12.8	6.1	1.1	4.9	NA	NA	NA
West Bengal	-3.5	1.0	-4.3	-9.5	-6.2	-3.6	-10.2	5.6	-15.0	1.4	2.9	4.2	-4.4	-4.6	1.2	NA	NA	NA
Others	4.5	-7.4	5.7	8.7	6.8	1.7	-35.3	-4.9	-31.9	-10.8	6.2	-10.0	50.9	51.6	3.5	-5.1	74.8	45.7
All-India	-1.9	-1.0	-0.9	7.5	5.9	1.5	-11.5	-1.4	-10.2	0.8	-2.4	3.2	10.9	7.7	3.0	-5.6	3.6	-8.9

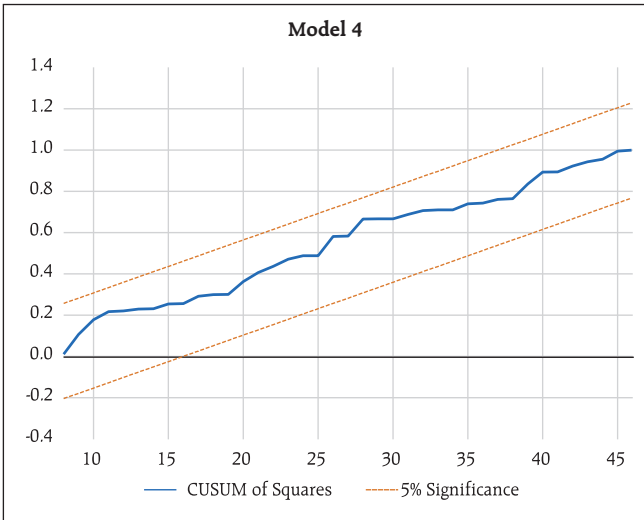
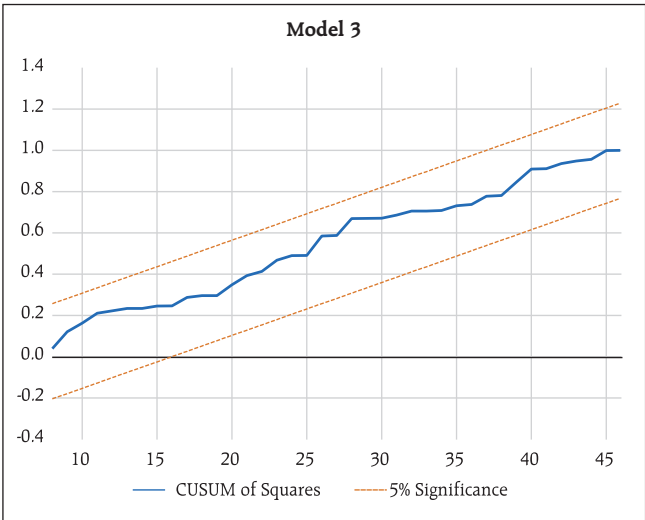
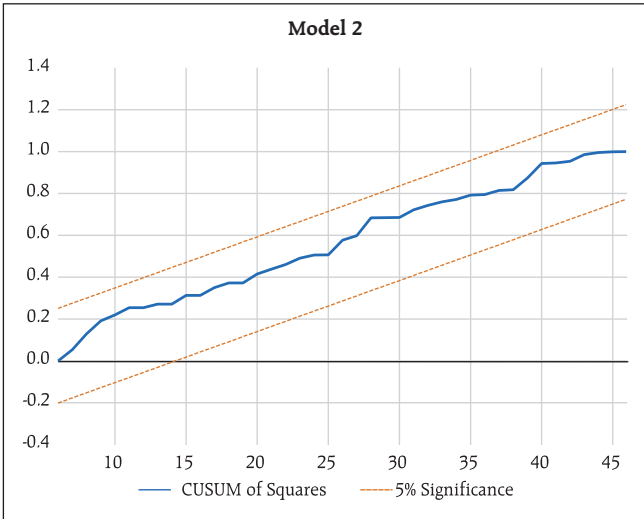
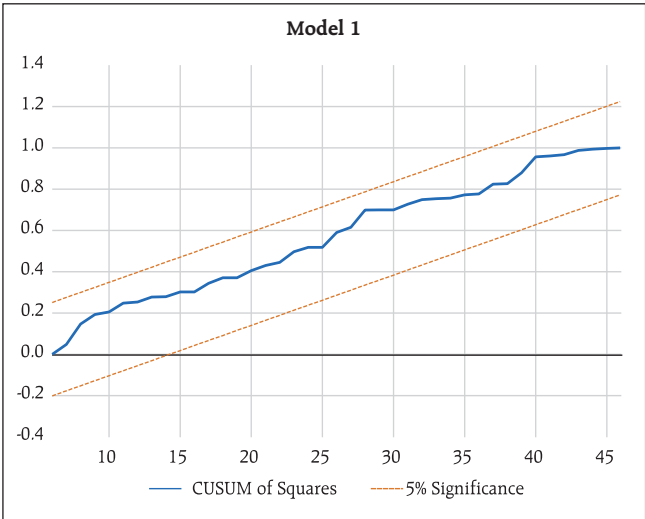
Note: P stands for production; A refers to Area and Y means Yield. Red colour denotes the negative values and blue denotes the positive values. The length of the data bars reflects the comparative growth among production, area and yield.

NA: Data unavailable.

Source: MoAFW.

Annex II: Empirical Analysis

Chart A1: ARDL-CUSUMQ test and trends in actual and predicted series



Financial Inclusion through Microfinance – An Assessment of the North-Eastern Region of India^{*}

by S. Chinngaihlian[^] and Pallavi Chavan[^]

Microfinance has been a facilitator in India's endeavour towards financial inclusion. It took roots in the southern region, but has over time spread to the historically under-banked eastern and north-eastern regions. This article documents the spread of microfinance in the north-east. Despite a smaller share in the total microfinance portfolio, the north-east scores reasonably well on most indicators of access and usage of microfinance. However, there are state-level differences, underscoring the need for sustained focus on the region through policies, such as the financial inclusion plans and Self-Help Group-Bank Linkage Programme.

Introduction

Financial inclusion has been a key priority for India. Since finance serves as a catalyst for economic development, the relevance of financial inclusion stretches beyond the realm of finance to socio-economic development. Its benefits, thus, do not remain limited to the beneficiaries alone but are economy wide. Since its inclusion as a policy objective by the Reserve Bank of India (RBI) in 2005, numerous policy initiatives have been taken both by the RBI, and the Central and State Governments for financial inclusion. Certain initiatives taken before 2005 have also majorly contributed to financial inclusion.

Microfinance is one such innovative initiative. It originated in Bangladesh following the establishment of the Grameen Bank, and came to India in 1992 as a pilot programme, which was later developed into the large-scale self-help group (SHG)-bank linkage programme (SBLP) by the National Bank for Agriculture and Rural Development (NABARD). In the 2000s, the SBLP was complemented by the microfinance institutions (MFI)-bank linkage model (RBI, 2008).

As the programmes/models evolved, so did the policy approach towards microfinance. From being largely self-regulated during the 1990s and 2000s, it became more robust entity-specific regulation based, involving Non-Banking Financial Companies (NBFCs)-MFIs in the 2010s, which finally paved the way to a harmonised approach involving all regulated entities in the microfinance sector in the 2020s (Rao, 2021).

Over these decades, the microfinance sector has shown a rapid growth in terms of (a) its intermediating institutions starting with banks [commercial and cooperative, and regional rural banks (RRBs)], extending later to NBFC-MFIs, and more recently to small finance banks (SFBs), and (b) its clientele. Given its fairly long stint, it may be useful to analyse the regional distribution of microfinance in India, and its contribution to financial inclusion at the regional level, as attempted in this article.

The article takes a closer look at the north-eastern region of India. The region is characterised by distinct geographical, topographical, geo-political and cultural features. It has been historically marked by limited physical connectivity and has also had a relatively under-developed banking infrastructure (Chavan, 2017). The region (comprising eight states) is often considered as a single entity, but every state is marked by a distinct demography, topography, culture/ethnicity, and economic and banking development.

Although studies on banking development, particularly those analysing regional aspects, cover

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the north-east along with other regions (Shetty, 2005), studies with an exclusive focus on the north-east and its individual states have been few (Chavan, 2020). While there have been some studies on microfinance in the north-east recently (Roy, 2011; Sharma, 2017; Nath and Nochi, 2014), there is no study in our knowledge looking at financial inclusion in the north-east through the lense of microfinance, as attempted in this article. The existing studies on microfinance in north-east focus on SBLP, while this article analyses the entire ambit of microfinance intermediated through banks and other intermediaries.

The article addresses the following questions:

- a. How is the regional spread of microfinance, particularly in the north-east compared with the other regions?
- b. Juxtaposing regional development of microfinance with banking development, whether and how far has microfinance helped in bridging the gap in banking development and served as a tool for financial inclusion?
- c. What are the intra-regional trends in microfinance in the north-east?

Although microfinance has been in India since the early-1990s, the article focuses on the recent period to capture the period of financial inclusion; as noted earlier, the RBI formally adopted financial inclusion as a policy objective in 2005. The pandemic has affected every sector with implications for the microfinance sector as well (Sriram, 2021). Given the limited regional data for the recent years, the article discusses certain preliminary trends in microfinance during the pandemic period.

The article is divided into six sections. Section II discusses how microfinance fits into India's broader policy on financial inclusion. Section III provides select features of the microfinance sector. Section IV places north-east in a comparative context with other regions

in banking and microfinance development. Section V discusses the state-level trends in microfinance within the north-east. Section VI provides the concluding observations.

II. Microfinance: A Part of the Financial Inclusion Policy

The financial inclusion policy, as espoused by the RBI and the Government of India as part of the financial inclusion plans (FIPs) and *Pradhan Mantri Jan Dhan Yojana* (PMJDY) is associated with meeting bank-specific targets of (a) opening bank branches/outlets; (b) opening basic savings bank deposit accounts (BSBDAs) for savings, payments and credit (overdraft); and (c) Kisan Credit Cards (KCCs) and General Credit Cards (GCCs).¹ Even though the introduction of microfinance in India predates the formal adoption of financial inclusion as a policy objective, it fits into the policy on financial inclusion in many ways.

First, financial inclusion is defined as "the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players" (Chakrabarty, 2011). Financial inclusion is for the socio-economically vulnerable sections that are prone to be financially excluded. Microfinance too has a distinct focus on women from the economically weaker sections. The group-based lending under microfinance, which relies on social collateral also underscores the focus of microfinance on the asset-poor sections.

Second, financial inclusion involves not just credit but also a bouquet of financial services, including deposits and payments. Microfinance under the SBLP involves the provision of savings and credit facilities for its beneficiaries; they are saving-linked before getting credit-linked.

¹ See RBI Annual Reports for FIP achievements.

Third, the policy on financial inclusion, as evident from the definition, relies on regulated entities as intermediaries. The Indian concept of microfinance too relies on regulated entities, including banks, NBFC-MFIs and SFBs. The extensive involvement of regulated entities, in fact, has distinguished the Indian microfinance sector from those in other countries, relying on semi-regulated or self-regulated MFIs.

III. Select Features of India's Microfinance Sector

Institutions Delivering Microfinance

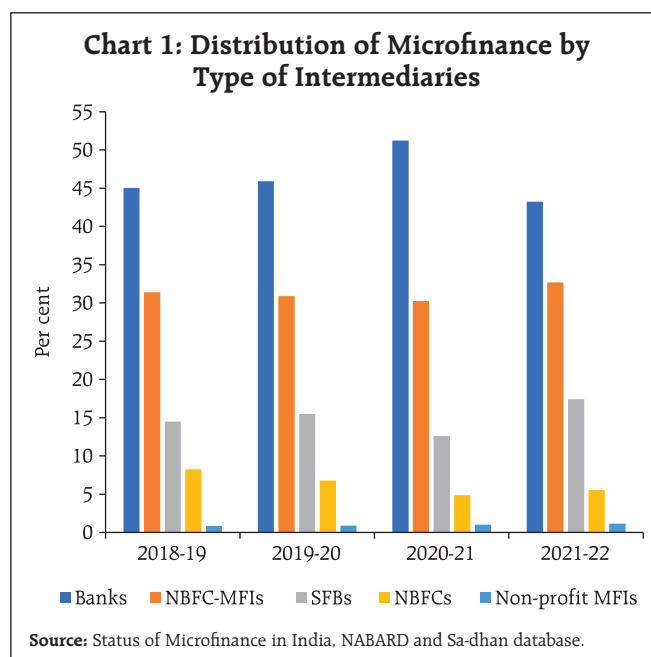
On account of SBLP, banks have been the first and foremost intermediary of microfinance lending directly to SHGs. With the growing popularity of MFI-bank linkage model since the 2000s, banks' financing to MFIs has also picked up. While the size and operations of MFIs expanded, concerns emerged about the lending and recovery practices of these institutions (RBI, 2011). These concerns prompted the RBI to carve out a newer category of NBFC-MFIs in 2011, and institute a tighter regulatory oversight over these entities to be eligible for priority sector credit from banks.² The regulatory oversight has facilitated a fairly disciplined growth of NBFC-MFIs, as they have emerged as the second-most important microfinance intermediary in recent years.

SFBs were introduced in 2015 as a differentiated banking institution for financial inclusion. They have emerged as the third-most important intermediary in recent years, displacing the smaller players, such as other NBFCs and non-profit MFIs (Chart 1).

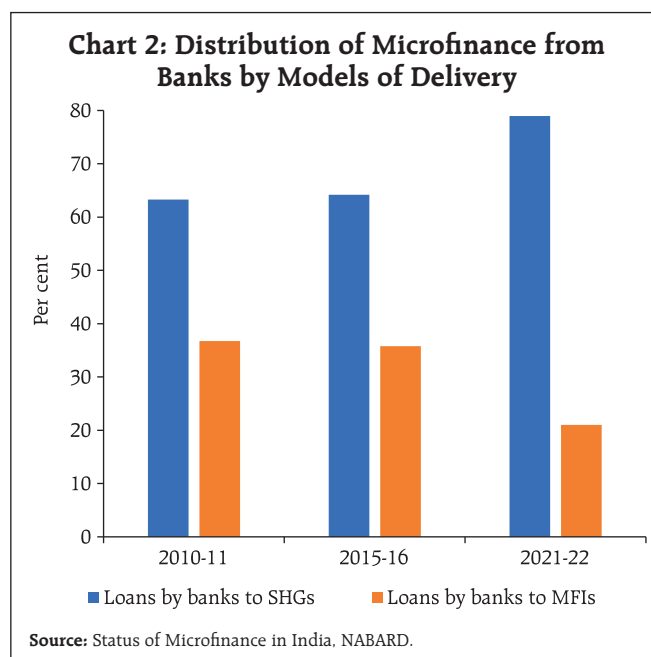
Models of Microfinance Delivery for Banks

Microfinance is delivered by banks to their ultimate beneficiaries, namely SHGs and Joint

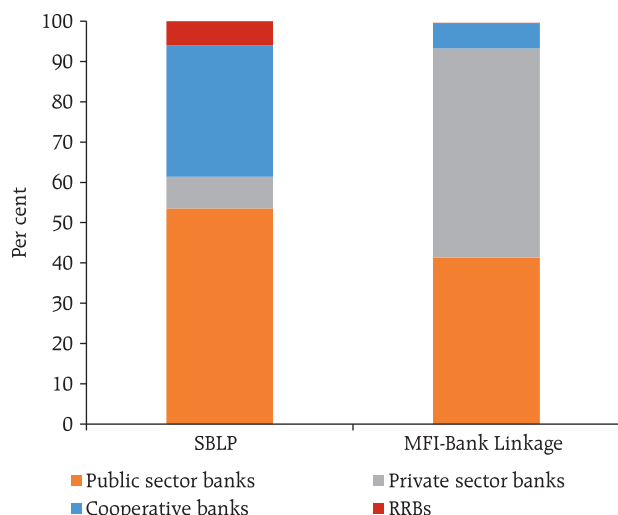
² These concerns related to high interest rates, and multiple loans leading to over-indebtedness of borrowers. The RBI introduced regulations concerning interest rates, annual margins and caps on loan amounts during various cycles, among others, for a better operational discipline among NBFC-MFIs, see "RBI Master Circular - Bank Finance to Non-Banking Financial Companies (NBFCs)" January 5, 2022.



Liability Groups (JLGs), through two broad models/programmes. Under SBLP, it is rendered directly.³ It is intermediated through MFIs under the MFI-bank linkage model. SBLP has been the predominant model of microfinance delivery for banks (Chart 2).



³ Although banks extend microfinance directly to SHGs under SBLP, they may involve other institutions such as non-governmental organisations (NGOs) in the formation and nurturing of SHGs.

Chart 3: Bank Group Shares in Microfinance under SBLP and MFI-Bank Linkage (2021-22)

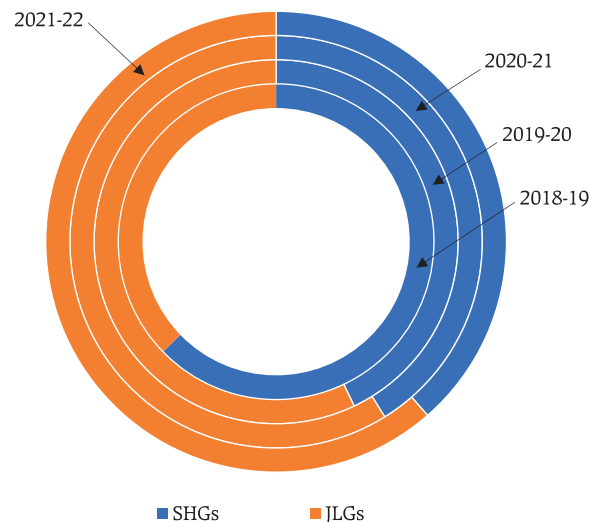
Source: Status of Microfinance in India, NABARD.

Among banks, public sector and cooperative banks have been the key drivers behind SBLP. By contrast, private sector banks have preferred the MFI-bank linkage model (Chart 3).

Microfinance Beneficiaries

The original idea of microfinance related to beneficiaries organised into SHGs under SBLP. JLGs were introduced in 2004-05 by NABARD for the mid-segment clients under microfinance.⁴ In recent years, JLGs have emerged as a more important grouping of beneficiaries being financed by banks (Chart 4).

Among SHGs, women's groups have been the most dominant (Table 1). Moreover, the penetration of microfinance has been more in rural than in urban

Chart 4: Composition of Groups of Beneficiaries Financed by Banks

Source: Status of Microfinance in India, NABARD.

areas. About 67 per cent of the total SHGs were financed under the National Rural Livelihood Mission (NRLM) as compared to only about 5 per cent under the National Urban Livelihood Mission (NULM) in 2021-22.

IV. Regional Perspective on Microfinance with Special Reference to North-East

Another key feature of microfinance, apart from those discussed in the foregoing section, is its regional reach and distribution. Banking in India has been historically characterised by regional imbalances, as

Table 1: Distribution of SHGs Financed by Banks (by Types of Beneficiaries)

Item	2018-19	2019-20	2020-21	2021-22
Total number of SHGs financed	26.9 (100.0)	31.4 (100.0)	28.8 (100.0)	33.9 (100.0)
of which,				
Total number of Women's SHGs financed	23.7 (87.6)	28.8 (91.7)	25.9 (89.7)	31.5 (92.7)
Total number of SHGs financed under NRLM	16.5 (61.1)	20.5 (65.1)	15.8 (54.9)	22.9 (67.4)
Total number of SHGs financed under NULM	1.6 (5.9)	1.6 (5.1)	1.1 (3.9)	1.8 (5.4)

Note: Number of SHGs is in lakhs; and figures in brackets indicate percentage share in total number of SHGs financed.

Source: Status of Microfinance in India, NABARD.

⁴ Microfinance under JLGs is given to (a) those not covered under any SHG or (b) those members of SHGs whose credit needs have increased over time and find it difficult to find other members to provide mutual guarantee for their large-sized loans. The microfinance extended through JLGs is, thus, of a longer term and fulfils credit needs of a larger size as compared to SHGs. Also, under SHGs, microfinance is typically given for group activities, while JLGs involve the provision of microfinance for individual as well as group activities against the social collateral of mutual guarantee. JLGs are being organised in large numbers for tenant farmers, oral lessees and sharecroppers, micro-entrepreneurs, etc. See <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=9336&Mode=0>

examined in the literature and even touched upon later in this section (Shetty, 2005). The regional perspective of microfinance assumes importance, as it is a tool for financial inclusion aimed at meeting the financial needs of the under-served pockets and addressing the existing imbalances in banking.

It can be argued that as microfinance is intermediated primarily through banks, the development of banking can influence the development of microfinance. In fact, Sharma (2017) identifies the lopsided development of bank branches as being a reason affecting the development of microfinance in the north-east. However, as the regional analysis in this article relates to the entire ambit of microfinance, provided not just by banks but also by non-bank intermediaries, it can provide useful insights into whether microfinance has indeed served as a tool for financial inclusion.

Following are the major stylised facts emerging from the regional assessment of microfinance:

Concentration of Microfinance in Eastern and Southern Regions

The microfinance portfolio is skewed with the eastern and southern regions together accounting

for close to 60 per cent of the total amount of microfinance disbursed and number of active microfinance loans in 2021-22 (Table 2).⁵ Earlier studies had identified the southern region as having the highest concentration of microfinance (Kumar and Golait, 2009).⁶ However, going by the striking ascent of microfinance in the eastern region in recent years, it can be concluded that this region has emerged as another hub of microfinance. Despite its proximity to the eastern region, the share of the north-east has been in single digits and the lowest among all regions; the region has, in fact, been seen losing its share in recent years.

Although useful, shares offer only a cursory insight into the distribution and hence, we construct indicators of access and usage of microfinance. These indicators too bring out the dominance of eastern and southern regions in the coverage of microfinance. To illustrate, almost all districts from the eastern region were covered by microfinance from banks in 2020-21. Similarly, in the southern region too, banks provided microfinance in about 84 per cent of the districts. The coverage of women through SHGs linked to banks through credit was also the highest in the eastern and southern regions.⁷

Table 2: Regional Shares in Microfinance Disbursed and Active Loans

Region	Share in microfinance disbursed				Share in number of active loans			
	2018-19	2019-20	2020-21	2021-22	2018-19	2019-20	2020-21	2021-22
North-eastern Region	8.3	6.3	5.7	3.5	5.7	5.1	4.6	3.6
Eastern Region	33.7	33.0	34.9	33.1	30.8	30.4	32.3	31.4
Central Region	14.0	14.8	15.7	17.1	15.3	15.7	16.2	17.4
Northern Region	7.3	8.1	8.3	8.6	7.7	8.2	8.6	8.8
Western Region	9.9	10.2	9.8	10.3	10.8	10.9	10.5	10.7
Southern Region	26.8	27.3	25.7	27.3	29.6	29.4	27.8	28.1
All-India	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Sa-dhan database.

⁵ The regional classification broadly follows from *Basic Statistical Returns of Scheduled Commercial Banks in India*, RBI; See Appendix 1.

⁶ As against the coverage of only SBLP in Kumar and Golait (2009), the current study has considered the entire ambit of microfinance as provided by Sa-dhan. The study has also compared the MFIN data with the data provided by Sa-dhan for corroboration; the trends are largely comparable.

⁷ Here, we divide the unique borrowers of microfinance by total women in a given region. As there is no gender-wise break up unique borrowers and women are indeed the key beneficiary of microfinance, we apply the reasonable assumption that all borrowers are women.

The usage of microfinance too was the most widespread in the eastern and southern regions. There were two loans reported per every unique borrower in these two regions, indicating higher intensity of microfinance.

Reasonable Spread of Microfinance in North-east

Based on the indicators of access and usage of microfinance, the penetration of microfinance seemed reasonable in the north-east; it was, of course, much less compared to the eastern and southern regions. Although only about three-fourth of the districts from the north-east were covered by microfinance in 2020-21, on most indicators of access and usage, the north-east scored reasonably well. To illustrate, per 1000 women, there were 27 saving-linked SHGs as compared to the national average of 18. Furthermore, the region had four credit-linked SHGs per 1000 women, again

closer to the national average. On an average, every unique borrower reported two microfinance loans, which was also comparable with the national average.

The penetration of microfinance in the central, northern and western regions was relatively weak. The national average for most indicators of access and usage of microfinance was pulled down by these three regions.

Microfinance - Partly Instrumental in Addressing Regional Imbalances in Banking

If we rank the six regions based on the indicators of banking access and usage, a clear divide emerges between the southern, northern and western regions on the one hand, and the eastern, north-eastern and central regions on the other, with the north-east clearly being the most under-banked region in the country (Table 3).

Table 3: Basic Indicators of Banking and Microfinance Access and Usage, by Region, 2020-21

Region	Microfinance Access				Microfinance Usage		Banking Access		Banking Usage		
	Districts covered (per cent) [#]	Overall credit coverage of women (per cent) ^{##}	Saving coverage of women-SBLP ^{***}	Credit coverage of women-SBLP ^{^^}	Per borrower availability* (₹)	Intensity of usage ^{^^^}	Population per bank branch	Bank branch per 1000 sq km	CD ratio (per cent) [~]	Bank credit per capita (₹)	Credit intensity (per cent) [^]
North-eastern	75	11	27	4	21,488	2	10,106	19	43	26,284	24
Eastern	97	15	22	9	37,283	2	11,687	61	41	27,496	34
Central	92	8	8	1	31,783	1	11,436	42	48	29,804	34
Northern	92	8	8	1	29,421	1	6,469	39	74	1,38,253	84
Western	89	9	18	3	30,649	1	8,314	47	88	1,62,185	98
Southern	84	14	31	11	31,939	2	6,143	69	83	1,23,005	59
All-India	88	11	18	5	32,781	2	8,610	48	72	81,277	63

[~] Bank credit to deposit ratio.

[^] Bank credit as per cent of net state domestic product (NSDP) at current prices.

[#] Districts covered by bank-led microfinance as per cent of total number of districts.

^{##} Unique borrowers of various MF intermediaries as per cent of total women population given that women are the key beneficiaries of MF.

^{^^} Number of credit-linked women SHGs per 1000 women under SBLP.

^{***} Number of saving-linked women SHGs per 1000 women under SBLP.

^{*} Total amount of microfinance per unique borrower.

^{^^^} Total number of microfinance loans per unique borrower.

Note: All banking access and usage indicators are for 2020-21 owing to non-availability of updated data except for credit intensity which are for 2019-20 owing to non-availability of updated NSDP data.

Source: Sa-dhan database; MFIN database; *Status of Microfinance in India*, NABARD; www.districts.nic.in

To illustrate, the average population per bank branch, the basic demographic indicator of banking access, was relatively low for the southern, northern, and western regions. By contrast, the eastern, north-eastern and central regions reported a much higher population per branch underlining a weaker density of banking for their population. Even if the population per bank branch for a region is low, it may not always imply easy access if the density of population is low, or the region is marked by hilly and difficult terrains. Hence, we construct the physical indicator of banking access defined as bank branch per 1000 square kilometres. The physical access to banking was the weakest in the north-east, with only 19 branches per 1000 square kilometres in 2020-21.

The intensity of bank credit usage captured by credit to net state domestic product (NSDP) ratio was also the lowest for the north-east, at just 24 per cent. The credit to deposit (CD) ratio – another indicator of credit usage – was 43 per cent in the north-east. By contrast, the CD ratio ranged between 70 per cent and 90 per cent in southern, northern and western regions.

Juxtaposing the banking and microfinance indicators, it can be inferred that microfinance has been able to make forays into the relatively under-banked regions. This observation is most certainly true for the eastern region, and to an extent, also for the north-east.

V. Microfinance in the North-east: Intra-regional Spread

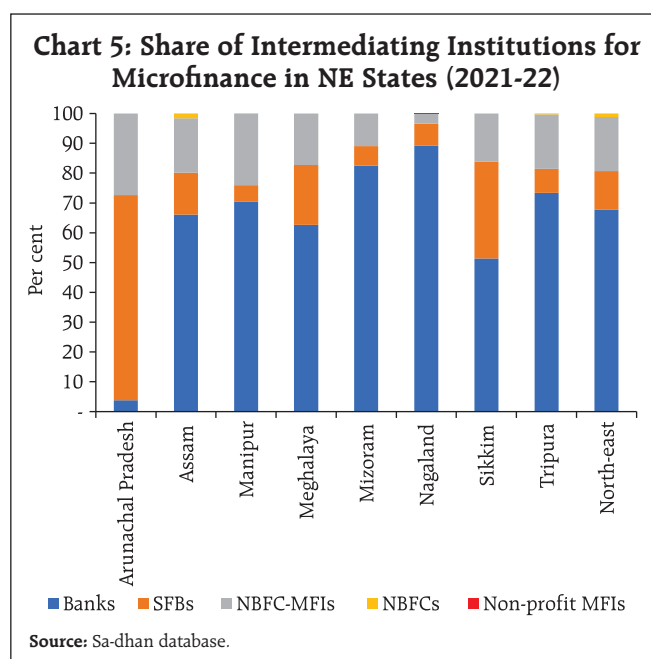
The regional analysis in the foregoing section while insightful, can conceal the intra-regional trends, which may be relevant for the policy on financial inclusion. While the north-eastern region shows a reasonable penetration of microfinance, there are commonalities and distinct differences across states within this region in terms of access and usage of microfinance.

Some of the intra-regional trends are as follows:

Banks - Single-largest Source of Microfinance

In all states of the north-east, banks are the most important source of microfinance except Arunachal Pradesh, where SFBs are the most dominant source (Chart 5). SFBs, however, are also banks, although of a differentiated kind.

Although banks are the single-largest source of microfinance in the north-east at present, various MFIs, including NBFC-MFIs, have played a role in spreading microfinance in the region in the past. As summarised well in Sharma (2017), while microfinance in the north-east began through SBLP, MFIs emerged as a major source during the 2000s. The concerns that surfaced by the end of 2000s about the lending and recovery practices of certain MFIs from the erstwhile state of Andhra Pradesh shook the microfinance sector across the country (see discussion in Section III). This also included the north-east (*ibid.*).⁸ While the hold



⁸ Sharma (2017) argues that the governmental ban on NGOs (acting as MFIs) in Assam also led to the decline of these institutions in the north-east.

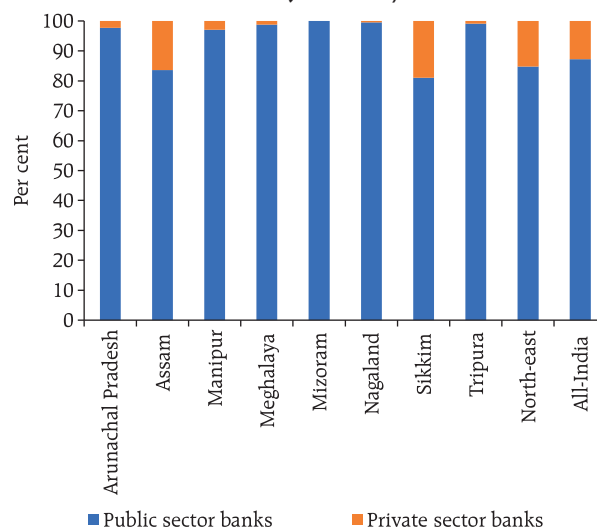
of MFIs has diminished, banks have sustained their position in microfinance in the north-east. And even as the general access and usage of banking remains plagued by regional imbalances, microfinance has been able to make inroads into an under-banked region like the north-east.

Within banks, it is the public sector banks that are almost entirely responsible for microfinance in all north-eastern states (Chart 6). The involvement of private sector banks remains limited not only in the north-east but also at the all-India level. In 2021-22, private sector banks accounted for only about 13 per cent of the total microfinance under SBLP across India.

State-level Differences in the Access and Usage of Microfinance

As discussed earlier, the north-east as a whole scores well on most indicators of access and usage of microfinance. However, the development of microfinance is not uniform within the region (Table 4).

Chart 6: Share of Banks in Microfinance under SBLP (2021-22)



Source: Status of Microfinance in India, NABARD.

To illustrate, the two states of Tripura and Assam score high on most indicators of microfinance.⁹ By contrast, Arunachal Pradesh, the far-eastern state of India, is on the other extreme in penetration of

Table 4: Microfinance Access and Usage (2021-22)

State	Microfinance Access				Microfinance Usage	
	Percentage of districts covered [#]	Overall credit coverage of women ^{##}	Saving coverage of women-SBLP ^{***}	Credit coverage of women-SBLP ^{^^}	Per-borrower availability* (₹)	Intensity of usage ^{**}
Arunachal Pradesh	60	1	5	0.2	23,419	1
Assam	76	12	31	4	15,726	2
Manipur	56	3	16	1	22,978	1
Meghalaya	82	2	21	2	20,228	1
Mizoram	100	3	23	2	22,356	1
Nagaland	100	2	9	1	33,102	1
Sikkim	100	9	21	2	27,664	1
Tripura	75	22	23	7	47,703	2
North-east	75	11	27	4	21,488	2

^{##} Unique borrowers of various MF intermediaries as per cent of total women population given that women are the key beneficiaries of MF.

^{^^} Number of credit-linked women SHGs per 1000 women under SBLP.

^{***} Number of saving-linked women SHGs per 1000 women under SBLP.

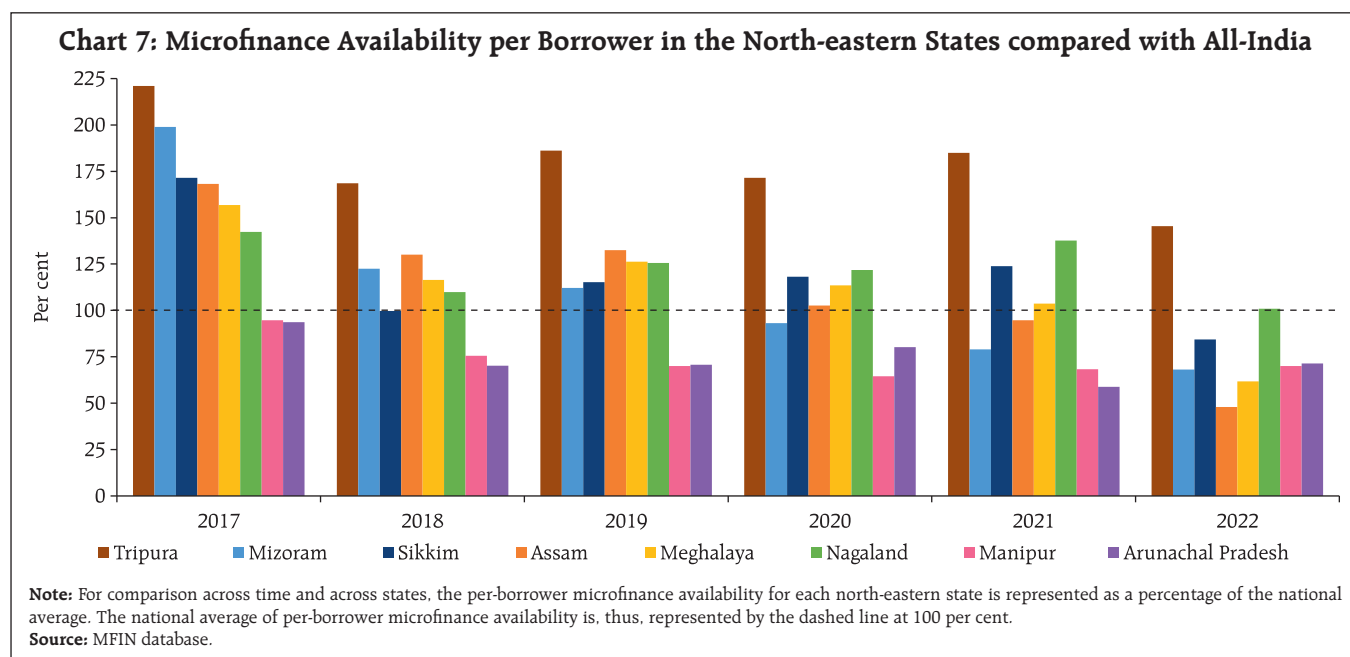
* Total amount of microfinance per unique borrower.

** Total number of loans per unique borrower.

[#] Districts covered by bank-led microfinance as per cent of total number of districts.

Source: Sa-dhan database; MFIN database; and *Status of Microfinance in India*, NABARD; www.districts.nic.in

⁹ For a similar observation, see Nath and Nochi (2014) and Sharma (2017).



microfinance. The remaining north-eastern states are positioned between these two ends with varying degrees of microfinance access and usage.

Declining Quantum of Microfinance

Notwithstanding the variations, it is evident that the relative quantum of microfinance per borrower across all north-eastern states has been on a decline in recent years (Chart 7). While the pandemic and the associated lockdowns starting in March 2020 could have played a role in reducing the per (unique) borrower availability of microfinance, the decline could be seen since the pre-pandemic period. The declining per-borrower availability also corroborates the observation made earlier about a reduced share of the north-east in the total microfinance portfolio in recent years (see Section IV).

VI. Conclusions

Microfinance, by its very nature, is focused on socio-economically vulnerable sections, especially women. It has been implemented primarily through regulated financial intermediaries, making it an important facilitator of financial inclusion in India. As part of the nationwide SBLP, banks, particularly

public sector banks, have been key stakeholders in microfinance. Over time, NBFC-MFIs and SFBs too have emerged as important intermediaries.

In its initial years, microfinance developed in the southern region; it has also spread to other regions over time. It has made significant strides into the eastern region – a region historically under-served by the banking system. In fact, most demographic and geographic indicators of banking access and usage bring out a regional divide even in the contemporary period, with the eastern, north-eastern and central regions emerging as relatively under-banked as compared to the southern, northern and western regions.

As microfinance has spread in the eastern region, it has also benefited the neighbouring north-east to an extent. Even though north-east accounts for the smallest share in total microfinance portfolio, it scores reasonably well on most indicators of access and usage of microfinance. At present, microfinance in the north-east is largely from banks, particularly public sector banks. Although the spread seems reasonable for north-east as a whole, the intra-regional trends suggest an uneven development of microfinance. The

development has been the highest in Tripura followed by Assam, while Arunachal Pradesh has lagged far behind.

The extent of commercial activity, degree of financial/ general literacy and institutional capabilities in promoting SHGs may have determined the pace of financial inclusion and adoption of microfinance in the north-east.¹⁰ The development of finance, however, is shaped not just by economic, social and cultural factors in a given region but also by public policy. There has been a distinct focus by the RBI on the north-east in terms of opening new bank branches/outlets. Going forward, the policy of financial inclusion, including the SBLP, needs to stay focused on the north-east, but more specifically on the states that are relatively under-served by finance from this region.

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¹⁰ Chavan (2020) observes that limited commercialisation contributed to limited credit needs in her study area in the north-east. Sharma (2017) identifies the non-availability of competent institutions for promoting SHGs as a factor affecting microfinance in the north-east.

Appendix 1: States/ Union Territories under Different Regions

North-eastern Region	
i)	Arunachal Pradesh
ii)	Assam
iii)	Manipur
iv)	Meghalaya
v)	Mizoram
vi)	Nagaland
vii)	Sikkim
viii)	Tripura
Eastern Region	
i)	Andaman and Nicobar Islands
ii)	Bihar
iii)	Jharkhand
iv)	Odisha
v)	West Bengal
Central Region	
i)	Chhattisgarh
ii)	Madhya Pradesh
iii)	Uttarakhand
iv)	Uttar Pradesh
Northern Region	
i)	Chandigarh
ii)	Haryana
iii)	Himachal Pradesh
iv)	Jammu and Kashmir
v)	NCT of Delhi
vi)	Punjab
vii)	Rajasthan
Western Region	
i)	Daman and Diu
ii)	Dadra and Nagar Haveli
iii)	Goa
iv)	Gujarat
v)	Maharashtra
Southern Region	
i)	Andhra Pradesh
ii)	Telangana
iii)	Tamil Nadu
iv)	Karnataka
v)	Kerala
vi)	Puducherry
vii)	Lakshadweep

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	2021-22	2021-22		2022-23	
		Q1	Q2	Q1	Q2
	1	2	3	4	5
1 Real Sector (% Change)					
1.1 GVA at Basic Prices	8.1	18.1	8.3	12.7	5.6
1.1.1 Agriculture	3.0	2.2	3.2	4.5	4.6
1.1.2 Industry	9.8	40.4	6.6	6.0	-3.1
1.1.3 Services	8.8	15.5	10.0	17.5	9.0
1.1a Final Consumption Expenditure	7.0	10.2	10.2	21.3	7.7
1.1b Gross Fixed Capital Formation	15.8	62.5	14.6	20.1	10.4
	2021-22	2021		2022	
		Sep.	Oct.	Sep.	Oct.
	1	2	3	4	5
1.2 Index of Industrial Production	11.4	4.4	4.2	3.5	-4.0
2 Money and Banking (% Change)					
2.1 Scheduled Commercial Banks					
2.1.1 Deposits	8.9	9.4	10.0	12.5	8.9
2.1.2 Credit #	9.6	6.7	6.9	20.2	17.0
2.1.2.1 Non-food Credit #	9.7	6.8	7.0	20.8	17.4
2.1.3 Investment in Govt. Securities	6.0	5.1	4.4	8.7	8.6
2.2 Money Stock Measures					
2.2.1 Reserve Money (M0)	13.0	14.7	14.1	12.9	11.2
2.2.2 Broad Money (M3)	8.8	9.3	9.7	8.6	9.1
3 Ratios (%)					
3.1 Cash Reserve Ratio	4.00	4.00	4.00	4.50	4.50
3.2 Statutory Liquidity Ratio	18.00	18.00	18.00	18.00	18.00
3.3 Cash-Deposit Ratio	4.7	4.7	4.9	5.4	5.2
3.4 Credit-Deposit Ratio	72.2	70.2	70.0	74.3	74.5
3.5 Incremental Credit-Deposit Ratio #	77.2	1.5	20.8	106.7	120.0
3.6 Investment-Deposit Ratio	28.7	29.9	29.4	28.9	29.3
3.7 Incremental Investment-Deposit Ratio	19.7	41.3	27.0	31.7	41.5
4 Interest Rates (%)					
4.1 Policy Repo Rate	4.00	4.00	4.00	5.90	5.90
4.2 Fixed Reverse Repo Rate	3.35	3.35	3.35	3.35	3.35
4.3 Standing Deposit Facility (SDF) Rate *	-	-	-	5.65	5.65
4.4 Marginal Standing Facility (MSF) Rate	4.25	4.25	4.25	6.15	6.15
4.5 Bank Rate	4.25	4.25	4.25	6.15	6.15
4.6 Base Rate	7.25/8.80	7.30/8.80	7.30/8.80	7.75/8.80	8.10/8.80
4.7 MCLR (Overnight)	6.45/7.00	6.55/7.00	6.50/7.00	6.85/7.75	6.95/7.85
4.8 Term Deposit Rate >1 Year	5.00/5.60	4.90/5.50	4.90/5.50	5.30/6.10	5.50/7.00
4.9 Savings Deposit Rate	2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00
4.10 Call Money Rate (Weighted Average)	3.34	3.19	3.28	5.52	6.16
4.11 91-Day Treasury Bill (Primary) Yield	3.84	3.45	3.56	6.18	6.40
4.12 182-Day Treasury Bill (Primary) Yield	4.27	3.57	3.83	6.64	6.72
4.13 364-Day Treasury Bill (Primary) Yield	4.58	3.81	4.04	6.80	6.92
4.14 10-Year G-Sec Par Yield (FBIL)	6.86	6.23	6.43	7.41	7.45
5 Reference Rate and Forward Premia					
5.1 INR-US\$ Spot Rate (Rs. Per Foreign Currency)	76.18	73.69	74.79	81.55	82.41
5.2 INR-Euro Spot Rate (Rs. Per Foreign Currency)	84.01	86.47	87.26	80.11	82.14
5.3 Forward Premia of US\$ 1-month (%)	5.67	3.50	4.17	3.83	3.28
3-month (%)	4.46	3.64	4.39	3.38	2.86
6-month (%)	4.10	3.87	4.75	3.02	2.74
6 Inflation (%)					
6.1 All India Consumer Price Index	5.51	4.3	4.5	7.4	6.8
6.2 Consumer Price Index for Industrial Workers	5.13	4.4	4.5	6.5	6.1
6.3 Wholesale Price Index	12.97	11.8	13.8	10.7	8.4
6.3.1 Primary Articles	10.25	6.0	7.4	11.7	11.0
6.3.2 Fuel and Power	32.50	29.5	38.6	32.6	23.2
6.3.3 Manufactured Products	11.10	11.6	12.9	6.3	4.4
7 Foreign Trade (% Change)					
7.1 Imports	55.43	85.7	57.4	14.9	10.0
7.2 Exports	44.62	22.7	43.4	4.8	-12.1

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.

*: As per Press Release No. 2022-2023/41 dated April 08, 2022

#: Bank credit growth and related ratios for all fortnights since December 3, 2021 are adjusted for past reporting errors by select scheduled commercial banks (SCBs).

Reserve Bank of India

No. 2: RBI - Liabilities and Assets *

(₹ Crore)

Item	As on the Last Friday/ Friday						
	2021-22	2021	2022				
		Nov.	Oct. 28	Nov. 4	Nov. 11	Nov. 18	Nov. 25
	1	2	3	4	5	6	7
1 Issue Department							
1.1 Liabilities							
1.1.1 Notes in Circulation	3107637	2955757	3181735	3183348	3193506	3189214	3188464
1.1.2 Notes Held in Banking Department	15	13	13	10	13	13	12
1.1/1.2 Total Liabilities (Total Notes Issued) or Assets	3107652	2955770	3181748	3183358	3193519	3189227	3188476
1.2 Assets							
1.2.1 Gold	128208	113277	117426	115214	120957	123258	123030
1.2.2 Foreign Securities	2978927	2841822	3063884	3067732	3072178	3065612	3065120
1.2.3 Rupee Coin	518	671	439	412	383	357	326
1.2.4 Government of India Rupee Securities	—	—	—	—	—	—	—
2 Banking Department							
2.1 Liabilities							
2.1.1 Deposits	1794574	2032713	1348275	1360878	1335425	1342994	1361809
2.1.1.1 Central Government	101	101	101	100	101	100	101
2.1.1.2 Market Stabilisation Scheme							
2.1.1.3 State Governments	42	43	42	42	42	42	42
2.1.1.4 Scheduled Commercial Banks	683437	656663	781814	801546	784971	814570	808841
2.1.1.5 Scheduled State Co-operative Banks	7123	6863	7784	7875	7621	7350	7401
2.1.1.6 Non-Scheduled State Co-operative Banks	4121	3581	4316	4203	4300	4389	4352
2.1.1.7 Other Banks	37589	37261	43657	43420	43440	43621	43959
2.1.1.8 Others	988819	1259369	447830	442206	440613	416023	423287
2.1.1.9 Financial Institutions Outside India	73343	68833	62731	61485	54335	56898	73825
2.1.2 Other Liabilities	1359254	1346388	1327741	1279205	1324925	1394822	1417253
2.1/2.2 Total Liabilities or Assets	3153828	3379102	2676016	2640083	2660350	2737815	2779062
2.2 Assets							
2.2.1 Notes and Coins	15	14	13	10	13	13	12
2.2.2 Balances Held Abroad	1243853	1489540	846033	840436	853553	919497	944365
2.2.3 Loans and Advances							
2.2.3.1 Central Government	—	—	—	—	—	—	—
2.2.3.2 State Governments	670	460	2186	12460	3728	5683	2944
2.2.3.3 Scheduled Commercial Banks	94299	93677	115871	94857	94649	97533	96669
2.2.3.4 Scheduled State Co-op. Banks	—	—	35	35	35	35	35
2.2.3.5 Industrial Dev. Bank of India	—	—	—	—	—	—	—
2.2.3.6 NABARD	24927	20231	4554	4576	4576	0	0
2.2.3.7 EXIM Bank	—	—	—	—	—	—	—
2.2.3.8 Others	8077	77	17566	10615	12682	12682	18174
2.2.3.9 Financial Institutions Outside India	72741	43986	63100	61975	54580	61358	74791
2.2.4 Bills Purchased and Discounted							
2.2.4.1 Internal	—	—	—	—	—	—	—
2.2.4.2 Government Treasury Bills	—	—	—	—	—	—	—
2.2.5 Investments	1491042	1544832	1413208	1407010	1418878	1419479	1420571
2.2.6 Other Assets	218203	186286	213451	208110	217656	221535	221501
2.2.6.1 Gold	201354	177516	193994	190340	199828	203629	203252

* Data are provisional.

No. 3: Liquidity Operations by RBI

(₹ Crore)

Date	Liquidity Adjustment Facility						Standing Liquidity Facilities	OMO (Outright)		Net Injection (+)/ Absorption (-) (1+3+5+7+9-2-4-6-8)
	Repo	Reverse Repo	Variable Rate Repo	Variable Rate Reverse Repo	MSF	SDF		Sale	Purchase	
	1	2	3	4	5	6		8	9	
Oct. 1, 2022	-	-	-	-	42161	114711	-	-	-	-72550
Oct. 2, 2022	-	-	-	-	21	9220	-	-	-	-9199
Oct. 3, 2022	-	-	-	-	220	177611	-	-	-	-177391
Oct. 4, 2022	-	-	-	-	323	204461	-396	-	-	-204534
Oct. 5, 2022	-	-	-	-	1275	15971	-	-	-	-14696
Oct. 6, 2022	-	-	-	-	423	178401	-	-	-	-177978
Oct. 7, 2022	-	-	-	61990	1636	87646	-	-	-	-148000
Oct. 8, 2022	-	-	-	-	3030	11006	-	-	-	-7976
Oct. 9, 2022	-	-	-	-	885	3038	-	-	-	-2153
Oct. 10, 2022	-	-	-	-	21173	57930	-	-	-	-36757
Oct. 11, 2022	-	-	-	-	5510	62843	505	-	-	-56828
Oct. 12, 2022	-	-	-	-	22436	61323	-	-	-	-38887
Oct. 13, 2022	-	-	-	-	4673	48144	3	-	-	-43468
Oct. 14, 2022	-	-	-	-	13358	49430	-	-	-	-36072
Oct. 15, 2022	-	-	-	-	407	29893	-	-	-	-29486
Oct. 16, 2022	-	-	-	-	12005	3877	-	-	-	8128
Oct. 17, 2022	-	-	-	-	4301	62862	-	-	-	-58561
Oct. 18, 2022	-	-	-	-	1574	77607	-	-	-	-76033
Oct. 19, 2022	-	-	-	-	1412	53879	-	-	-	-52467
Oct. 20, 2022	-	-	-	-	20028	52170	-	-	-	-32142
Oct. 21, 2022	-	-	-	5648	51134	80645	-	-	-	-35159
Oct. 22, 2022	-	-	-	-	7063	10119	-	-	-	-3056
Oct. 23, 2022	-	-	-	-	1433	2262	-	-	-	-829
Oct. 24, 2022	-	-	-	-	6016	12156	-	-	-	-6140
Oct. 25, 2022	-	-	-	-	51885	56161	277	-	-	-3999
Oct. 26, 2022	-	-	-	-	733	25809	-	-	-	-25076
Oct. 27, 2022	-	-	-	-	21331	69409	348	-	-	-47730
Oct. 28, 2022	-	-	-	-	21623	60602	-	-	-	-38979
Oct. 29, 2022	-	-	-	-	16187	18400	-	-	-	-2213
Oct. 30, 2022	-	-	-	-	1174	2887	-	-	-	-1713
Oct. 31, 2022	-	-	-	-	1662	84768	235	-	-	-82871

SDF: Standing Deposit Facility; MSF: Marginal Standing Facility.

No. 4: Sale/ Purchase of U.S. Dollar by the RBI

i) Operations in onshore / offshore OTC segment

Item	2021-22	2021	2022	
		Oct.	Sep.	Oct.
	1	2	3	4
1 Net Purchase/ Sale of Foreign Currency (US \$ Million) (1.1–1.2)	17312	-100	-10361	-922
1.1 Purchase (+)	113991	7755	23265	24855
1.2 Sale (–)	96679	7855	33626	25777
2 ₹ equivalent at contract rate (₹ Crores)	134629	156	-85132	-10077
3 Cumulative (over end-March) (US \$ Million)	17312	40330	-33417	-34339
(₹ Crores)	134629	305136	-273554	-283631
4 Outstanding Net Forward Sales (–)/ Purchase (+) at the end of month (US \$ Million)	65791	49106	10423	241

ii) Operations in currency futures segment

Item	2021-22	2021	2022	
		Oct.	Sep.	Oct.
	1	2	3	4
1 Net Purchase/ Sale of Foreign Currency (US \$ Million) (1.1–1.2)	0	0	0	0
1.1 Purchase (+)	2370	0	895	1875
1.2 Sale (–)	2370	0	895	1875
2 Outstanding Net Currency Futures Sales (–)/ Purchase (+) at the end of month (US \$ Million)	0	0	-1460	-855

No. 4 A : Maturity Breakdown (by Residual Maturity) of Outstanding Forwards of RBI (US \$ Million)

Item	As on October 31, 2022		
	Long (+)	Short (-)	Net (1-2)
	1	2	3
1. Upto 1 month	6356	17033	-10677
2. More than 1 month and upto 3 months	4920	6697	-1777
3. More than 3 months and upto 1 year	8806	1246	7560
4. More than 1 year	5135	0	5135
Total (1+2+3+4)	25217	24976	241

No. 5: RBI's Standing Facilities

(₹ Crore)

Item	As on the Last Reporting Friday							
	2021-22	2021	2022					
		Nov. 19	Jun. 17	Jul. 29	Aug. 26	Sep. 23	Oct. 21	Nov. 18
	1	2	3	4	5	6	7	8
1 MSF	11	7201	7	139	4034	9657	51134	3250
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	1655	0	910	1022	1801
4 Others								
4.1 Limit	76000	76000	76000	76000	76000	76000	76000	76000
4.2 Outstanding	32401	24196	49364	40314	40159	31039	20249	10850
5 Total Outstanding (1+2.2+3.2+4.2)	32412	31397	49371	42108	44193	41606	72405	15901

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

(₹ Crore)

(₹ Crore)					
Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2021-22	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
		1	2	3	4
1 Currency with the Public (1.1 + 1.2 + 1.3 – 1.4)	3035689	2825698	3044594	3063347	3088767
1.1 Notes in Circulation	3105703	2917700	3138282	3157050	3189311
1.2 Circulation of Rupee Coin	27270	26550	28048	28260	28260
1.3 Circulation of Small Coins	743	743	743	743	743
1.4 Cash on Hand with Banks	98028	119294	122480	122707	129548
2 Deposit Money of the Public	2271436	2005695	2183446	2255410	2236756
2.1 Demand Deposits with Banks	2212992	1958530	2120902	2185640	2166755
2.2 ‘Other’ Deposits with Reserve Bank	58444	47165	62544	69770	70001
3 M ₁ (1 + 2)	5307125	4831393	5228040	5318757	5325523
4 Post Office Saving Bank Deposits	187061	177164	187061	187061	187061
5 M ₂ (3 + 4)	5494186	5008557	5415101	5505818	5512584
6 Time Deposits with Banks	15186605	14691721	15844856	16017303	15973262
7 M ₃ (3 + 6)	20493729	19523114	21072896	21336060	21298785
8 Total Post Office Deposits	1008539	946407	1008539	1008539	1008539
9 M ₄ (7 + 8)	21502268	20469521	22081435	22344599	22307324

No. 7: Sources of Money Stock (M₃)

(₹ Crore)

Sources	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2021-22	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
1 Net Bank Credit to Government	6477629	5977237	6437672	6559027	6443899
1.1 RBI's net credit to Government (1.1.1–1.1.2)	1450596	1043103	1060547	1153344	1091548
1.1.1 Claims on Government	1490991	1561612	1418983	1418845	1411232
1.1.1.1 Central Government	1489324	1556811	1412468	1408006	1406140
1.1.1.2 State Governments	1667	4802	6515	10839	5092
1.1.2 Government deposits with RBI	40394	518509	358436	265501	319684
1.1.2.1 Central Government	40352	518467	358394	265459	319642
1.1.2.2 State Governments	42	42	42	42	42
1.2 Other Banks' Credit to Government	5027033	4934134	5377125	5405684	5352351
2 Bank Credit to Commercial Sector	12616520	11749815	13375783	13593452	13620705
2.1 RBI's credit to commercial sector	16571	1980	29638	18477	18954
2.2 Other banks' credit to commercial sector	12599950	11747835	13346144	13574975	13601751
2.2.1 Bank credit by commercial banks	11891314	11044619	12629875	12860031	12883673
2.2.2 Bank credit by co-operative banks	690201	685289	699065	697506	700682
2.2.3 Investments by commercial and co-operative banks in other securities	18435	17927	17205	17438	17396
3 Net Foreign Exchange Assets of Banking Sector (3.1 + 3.2)	4854063	5004777	4452333	4482541	4434718
3.1 RBI's net foreign exchange assets (3.1.1–3.1.2)	4442479	4630458	4196740	4226949	4179125
3.1.1 Gross foreign assets	4442720	4630698	4196980	4227189	4179365
3.1.2 Foreign liabilities	241	241	240	240	240
3.2 Other banks' net foreign exchange assets	411583	374319	255593	255593	255593
4 Government's Currency Liabilities to the Public	28013	27293	28791	29003	29003
5 Banking Sector's Net Non-monetary Liabilities	3482496	3236007	3221682	3327964	3229540
5.1 Net non-monetary liabilities of RBI	1308500	1373122	1226523	1282653	1243594
5.2 Net non-monetary liabilities of other banks (residual)	2173996	1862885	1995159	2045311	1985946
M₃ (1+2+3+4–5)	20493729	19523114	21072896	21336060	21298785

No. 8: Monetary Survey

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2021-22	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
Monetary Aggregates					
NM ₁ (1.1 + 1.2.1+1.3)	5307125	4831393	5228040	5318544	5325963
NM ₂ (NM ₁ + 1.2.2.1)	12081049	11377209	12297567	12464707	12453320
NM ₃ (NM ₂ + 1.2.2.2 + 1.4 = 2.1 + 2.2 + 2.3 – 2.4 – 2.5)	20634885	19634683	21469978	21706156	21712615
1 Components					
1.1 Currency with the Public	3035689	2825698	3044594	3063134	3088753
1.2 Aggregate Deposits of Residents	17266157	16504787	17830962	18066001	18005780
1.2.1 Demand Deposits	2212992	1958530	2120902	2185640	2167209
1.2.2 Time Deposits of Residents	15053166	14546257	15710059	15880360	15838571
1.2.2.1 Short-term Time Deposits	6773925	6545816	7069527	7146162	7127357
1.2.2.1.1 Certificates of Deposit (CDs)	176718	57773	245508	217890	232680
1.2.2.2 Long-term Time Deposits	8279241	8000441	8640533	8734198	8711214
1.3 'Other' Deposits with RBI	58444	47165	62544	69770	70001
1.4 Call/Term Funding from Financial Institutions	274594	257033	531879	507251	548081
2 Sources					
2.1 Domestic Credit	20080599	18725010	20902031	21265586	21166063
2.1.1 Net Bank Credit to the Government	6477629	5977237	6437672	6559027	6444604
2.1.1.1 Net RBI credit to the Government	1450596	1043103	1060547	1153344	1091548
2.1.1.2 Credit to the Government by the Banking System	5027033	4934134	5377125	5405684	5353056
2.1.2 Bank Credit to the Commercial Sector	13602969	12747773	14464359	14706559	14721460
2.1.2.1 RBI Credit to the Commercial Sector	39581	23882	34173	23031	23508
2.1.2.2 Credit to the Commercial Sector by the Banking System	13563389	12723891	14430186	14683528	14697951
2.1.2.2.1 Other Investments (Non-SLR Securities)	952181	968828	1065552	1088920	1075111
2.2 Government's Currency Liabilities to the Public	28013	27293	28791	28791	29003
2.3 Net Foreign Exchange Assets of the Banking Sector	4705191	4873643	4424302	4444043	4369027
2.3.1 Net Foreign Exchange Assets of the RBI	4442479	4630458	4196740	4226949	4179125
2.3.2 Net Foreign Currency Assets of the Banking System	262711	243185	227562	217094	189901
2.4 Capital Account	3021858	3047558	3274754	3342196	3335444
2.5 Other items (net)	1157060	943704	610392	690068	516034

No. 9: Liquidity Aggregates

(₹ Crore)

Aggregates	2021-22	2021	2022		
		Oct.	Aug.	Sep.	Oct.
	1	2	3	4	5
1 NM₃	20630753	19634683	21386993	21469978	21712615
2 Postal Deposits	594633	557583	594633	594633	594633
3 L₁ (1 + 2)	21225386	20192266	21981626	22064611	22307248
4 Liabilities of Financial Institutions	49578	26662	24000	58930	58446
4.1 Term Money Borrowings	1824	3627	1654	1643	1518
4.2 Certificates of Deposit	39170	18175	20143	49270	49270
4.3 Term Deposits	8584	4860	2203	8017	7657
5 L₂ (3 + 4)	21274964	20218928	22005626	22123541	22365694
6 Public Deposits with Non-Banking Financial Companies	66542	66542	..
7 L₃ (5 + 6)	21341506	22190083	..

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				
	2021-22	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
1 Components					
1.1 Currency in Circulation	3133716	2944993	3167073	3185841	3218315
1.2 Bankers' Deposits with the RBI	876726	685574	822550	840153	850449
1.2.1 Scheduled Commercial Banks	823632	638589	767171	784890	793425
1.3 'Other' Deposits with the RBI	58444	47165	62544	69770	70001
Reserve Money (1.1 + 1.2 + 1.3 = 2.1 + 2.2 + 2.3 – 2.4 – 2.5)	4068887	3677732	4052168	4095764	4138765
2 Sources					
2.1 RBI's Domestic Credit	906895	393104	1053160	1122677	1174230
2.1.1 Net RBI credit to the Government	1450596	1043103	1060547	1153344	1091548
2.1.1.1 Net RBI credit to the Central Government (2.1.1.1.1 + 2.1.1.1.2 + 2.1.1.1.3 + 2.1.1.1.4 – 2.1.1.1.5)	1448972	1038344	1054074	1142548	1086498
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	1488816	1556230	1412049	1407650	1405888
2.1.1.1.3.1 Central Government Securities	1488816	1556230	1412049	1407650	1405888
2.1.1.1.4 Rupee Coins	508	581	420	356	252
2.1.1.1.5 Deposits of the Central Government	40352	518467	358394	265459	319642
2.1.1.2 Net RBI credit to State Governments	1624	4759	6473	10796	5049
2.1.2 RBI's Claims on Banks	-583282	-673881	-41560	-53698	59174
2.1.2.1 Loans and Advances to Scheduled Commercial Banks	-560272	-651979	-37025	-49144	63728
2.1.3 RBI's Credit to Commercial Sector	39581	23882	34173	23031	23508
2.1.3.1 Loans and Advances to Primary Dealers	–	–	910	514	1022
2.1.3.2 Loans and Advances to NABARD	23010	21902	4534	4554	4554
2.2 Government's Currency Liabilities to the Public	28013	27293	28791	28791	29003
2.3 Net Foreign Exchange Assets of the RBI	4442479	4630458	4196740	4226949	4179125
2.3.1 Gold	322213	287854	306807	320700	307638
2.3.2 Foreign Currency Assets	4120283	4342621	3889950	3906266	3871505
2.4 Capital Account	1254092	1290235	1358279	1428375	1412059
2.5 Other Items (net)	54408	82887	-131756	-145722	-168465

No. 11: Reserve Money - Components and Sources

(₹ Crore)

Item	2021-22	Outstanding as on March 31/ last Fridays of the month/ Fridays					
		2021	2022				
		Oct. 29	Sep. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28
	1	2	3	4	5	6	7
Reserve Money (1.1 + 1.2 + 1.3 = 2.1 + 2.2 + 2.3 + 2.4 + 2.5 – 2.6)	4068887	3703451	4129912	4095976	4109598	4138765	4118874
1 Components							
1.1 Currency in Circulation	3133716	2945130	3158321	3186053	3187745	3218315	3210947
1.2 Bankers' Deposits with RBI	876726	710775	901286	840153	852185	850449	837571
1.3 'Other' Deposits with RBI	58444	47546	70305	69770	69668	70001	70356
2 Sources							
2.1 Net Reserve Bank Credit to Government	1450596	1108510	1179495	1153344	1123422	1091548	1107220
2.2 Reserve Bank Credit to Banks	-560272	-696020	-41927	-49144	775	63728	54210
2.3 Reserve Bank Credit to Commercial Sector	16571	2137	18892	18477	19004	18954	19629
2.4 Net Foreign Exchange Assets of RBI	4442479	4635086	4176810	4226949	4193196	4179125	4221465
2.5 Government's Currency Liabilities to the Public	28013	27441	29003	29003	29003	29003	29212
2.6 Net Non- Monetary Liabilities of RBI	1308500	1373703	1232361	1282653	1255804	1243594	1312863

No. 12: Commercial Bank Survey

(₹ Crore)

Item	Outstanding as on last reporting Fridays of the month/ reporting Fridays of the month				
	2021-22	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
1 Components					
1.1 Aggregate Deposits of Residents	16331874	15567557	16897198	17126710	17066688
1.1.1 Demand Deposits	2072747	1822965	1981191	2044724	2025644
1.1.2 Time Deposits of Residents	14259128	13744592	14916007	15081987	15041044
1.1.2.1 Short-term Time Deposits	6416607	6185066	6712203	6786894	6768470
1.1.2.1.1 Certificates of Deposits (CDs)	176718	57773	245508	217890	232680
1.1.2.2 Long-term Time Deposits	7842520	7559526	8203804	8295093	8272574
1.2 Call/Term Funding from Financial Institutions	274594	257033	531879	507251	548081
2 Sources					
2.1 Domestic Credit	17575002	16650633	18780840	19064257	19022933
2.1.1 Credit to the Government	4728179	4637469	5074819	5103538	5050880
2.1.2 Credit to the Commercial Sector	12846823	12013164	13706021	13960719	13972053
2.1.2.1 Bank Credit	11891314	11044619	12629875	12860031	12884629
2.1.2.1.1 Non-food Credit	11836304	10980922	12608087	12839397	12858974
2.1.2.2 Net Credit to Primary Dealers	11522	7491	18753	19896	20397
2.1.2.3 Investments in Other Approved Securities	769	1189	803	834	879
2.1.2.4 Other Investments (in non-SLR Securities)	943218	959866	1056590	1079958	1066148
2.2 Net Foreign Currency Assets of Commercial Banks (2.2.1–2.2.2–2.2.3)	262711	243185	227562	217094	189901
2.2.1 Foreign Currency Assets	465464	457371	428000	421765	397394
2.2.2 Non-resident Foreign Currency Repatriable Fixed Deposits	133439	145464	134797	136942	137410
2.2.3 Overseas Foreign Currency Borrowings	69314	68722	65641	67728	70082
2.3 Net Bank Reserves (2.3.1+2.3.2–2.3.3)	1268887	1397969	914364	944564	846870
2.3.1 Balances with the RBI	683437	638589	767171	784890	793425
2.3.2 Cash in Hand	85926	107401	110168	110530	117173
2.3.3 Loans and Advances from the RBI	-499524	-651979	-37025	-49144	63728
2.4 Capital Account	1743595	1733153	1892304	1889651	1899214
2.5 Other items (net) (2.1+2.2+2.3–2.4–1.1–1.2)	756537	734044	601386	702303	545722
2.5.1 Other Demand and Time Liabilities (net of 2.2.3)	571535	501782	626122	626232	641771
2.5.2 Net Inter-Bank Liabilities (other than to PDs)	26533	25116	10933	10882	18150

No. 13: Scheduled Commercial Banks' Investments

(₹ Crore)

Item	As on March 25, 2022	2021	2022		
		Oct. 22	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
1 SLR Securities	4728948	4638658	5075622	5104372	5051054
2 Other Government Securities (Non-SLR)	-	-	154764	172195	172180
3 Commercial Paper	55315	74600	64736	64896	65165
4 Shares issued by					
4.1 PSUs	7642	10137	9868	9368	9847
4.2 Private Corporate Sector	73814	69330	69565	68903	70821
4.3 Others	5152	5098	5049	5019	5006
5 Bonds/Debentures issued by					
5.1 PSUs	117860	117204	101267	99974	99644
5.2 Private Corporate Sector	326188	327885	315463	316187	318561
5.3 Others	148753	147953	94481	102738	92890
6 Instruments issued by					
6.1 Mutual funds	34404	51553	53746	51697	49890
6.2 Financial institutions	174090	156107	187652	188981	182144

Note: Data against column Nos. (1), (2) & (3) are Final and for column Nos. (4) & (5) data are Provisional.

‘-’ Data are not available.

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			
	2021-22	2021	2022		2021-22	2021	2022	
		Oct.	Sep.	Oct.		Oct.	Sep.	Oct.
	1	2	3	4	5	6	7	8
Number of Reporting Banks	212	211	213	213	136	135	137	137
1 Liabilities to the Banking System	262674	234060	302391	297165	258649	229549	298528	293726
1.1 Demand and Time Deposits from Banks	194143	171935	202303	193184	190570	167740	199205	190380
1.2 Borrowings from Banks	38369	40905	48094	49654	38317	40905	47845	49559
1.3 Other Demand and Time Liabilities	30162	21220	51994	54327	29762	20903	51478	53787
2 Liabilities to Others	17832517	17168903	19169520	18930353	17380755	16728521	18726001	18489534
2.1 Aggregate Deposits	16899634	16291396	17964696	17700052	16465313	15866061	17543813	17276486
2.1.1 Demand	2117513	1946193	2279849	2144196	2072747	1905673	2233981	2097596
2.1.2 Time	14782121	14345203	15684847	15555856	14392567	13960388	15309832	15178890
2.2 Borrowings	278985	263983	466293	531081	274594	259657	456497	526165
2.3 Other Demand and Time Liabilities	653898	613523	738532	699219	640848	602803	725691	686882
3 Borrowings from Reserve Bank	94299	93597	112556	115906	94299	93597	112521	115871
3.1 Against Usance Bills /Promissory Notes	—	—	—	—	—	—	—	—
3.2 Others	94299	93597	112556	115906	94299	93597	112521	115871
4 Cash in Hand and Balances with Reserve Bank	788725	789961	976214	917766	769363	769600	953656	895631
4.1 Cash in Hand	88732	109142	111656	117156	85926	106286	108743	113817
4.2 Balances with Reserve Bank	699993	680819	864558	800610	683437	663314	844913	781814
5 Assets with the Banking System	315282	268619	368427	363225	243637	213942	306807	301785
5.1 Balances with Other Banks	199434	186549	237182	223636	164240	150786	195531	182243
5.1.1 In Current Account	19733	19236	29133	20915	16691	16569	24701	18279
5.1.2 In Other Accounts	179701	167312	208050	202721	147549	134217	170829	163964
5.2 Money at Call and Short Notice	36905	27608	24681	35719	6982	11960	10226	19512
5.3 Advances to Banks	39340	24329	47280	42548	35802	23949	45379	42123
5.4 Other Assets	39603	30133	59284	61321	36613	27247	55671	57906
6 Investment	4874070	4809010	5218402	5214515	4728948	4666403	5070727	5065922
6.1 Government Securities	4867102	4801635	5211728	5207703	4728179	4664994	5069889	5065093
6.2 Other Approved Securities	6968	7374	6675	6812	769	1409	838	829
7 Bank Credit	12259048	11449603	13412976	13246412	11891314	11105758	13041791	12864695
7a Food Credit	90827	103290	64885	77717	55011	67472	19167	31998
7.1 Loans, Cash-credits and Overdrafts	12016486	11230982	13161036	13006128	11651337	10889136	12792722	12627183
7.2 Inland Bills-Purchased	36070	33176	39195	36939	36055	33161	39175	36921
7.3 Inland Bills-Discounted	155796	131656	164859	156910	154212	130353	162753	154838
7.4 Foreign Bills-Purchased	19537	19901	18926	17504	19157	19711	18754	17358
7.5 Foreign Bills-Discounted	31160	33887	28958	28930	30554	33397	28386	28396

Note: Data in column Nos. (4) & (8) are Provisional.

No. 15: Deployment of Gross Bank Credit by Major Sectors

(₹ Crore)

Sector	Outstanding as on				Growth (%)	
	Mar.25, 2022	2021	2022		Financial year so far	Y-o-Y
			Oct.22	Sep.23		
	1	2	3	4	%	%
I. Gross Bank Credit (II+III)	11891314	11044619	12630051	12889117	8.4	17.9
II. Food Credit	55011	63697	21788	25655	-53.4	-59.7
III. Non-food Credit	11836304	10980922	12608263	12863462	8.7	18.3
1. Agriculture & Allied Activities	1461719	1400032	1561537	1590138	8.8	13.6
2. Industry (Micro and Small, Medium and Large)	3156067	2897434	3240817	3290584	4.3	13.6
2.1 Micro and Small ¹	532792	458263	572958	551961	3.6	20.4
2.2 Medium	213996	168815	225083	221072	3.3	31.0
2.3 Large	2409279	2270356	2442775	2517551	4.5	10.9
3. Services	3017258	2712122	3222163	3321383	10.1	22.5
3.1 Transport Operators	155352	141959	157763	160819	3.5	13.3
3.2 Computer Software	20899	20923	21519	22337	6.9	6.8
3.3 Tourism, Hotels & Restaurants	64378	60625	66098	63753	-1.0	5.2
3.4 Shipping	8436	7574	7245	8690	3.0	14.7
3.5 Aviation	23979	29114	23409	23955	-0.1	-17.7
3.6 Professional Services	116742	108668	120581	124531	6.7	14.6
3.7 Trade	696301	637971	745734	746578	7.2	17.0
3.7.1 Wholesale Trade	351213	326520	377709	372358	6.0	14.0
3.7.2 Retail Trade	345088	311451	368025	374220	8.4	20.2
3.8 Commercial Real Estate	291168	276817	297707	305139	4.8	10.2
3.9 Non-Banking Financial Companies (NBFCs) ² of which,	1078447	910287	1171658	1255742	16.4	38.0
3.9.1 Housing Finance Companies (HFCs)	278979	253950	302864	305430	9.5	20.3
3.9.2 Public Financial Institutions (PFIs)	144121	90734	152802	168466	16.9	85.7
3.10 Other Services ³	561556	518185	610451	609839	8.6	17.7
4. Personal Loans	3381699	3136729	3702006	3770285	11.5	20.2
4.1 Consumer Durables	27628	22102	33506	34727	25.7	57.1
4.2 Housing	1684424	1571738	1805808	1825900	8.4	16.2
4.3 Advances against Fixed Deposits	78730	68529	96332	98302	24.9	43.4
4.4 Advances to Individuals against share & bonds	6161	5760	6636	6806	10.5	18.2
4.5 Credit Card Outstanding	147789	139493	167179	179178	21.2	28.4
4.6 Education	82723	80480	89537	90410	9.3	12.3
4.7 Vehicle Loans	402689	377920	449531	461375	14.6	22.1
4.8 Loan against gold jewellery	75311	72420	80617	83620	11.0	15.5
4.9 Other Personal Loans	876244	798287	972861	989967	13.0	24.0
5. Priority Sector (Memo)						
5.1 Agriculture & Allied Activities ⁴	1484923	1412497	1601293	1623409	9.3	14.9
5.2 Micro & Small Enterprises ⁵	1377848	1234124	1483856	1430352	3.8	15.9
5.3 Medium Enterprises ⁶	351900	261845	371997	369542	5.0	41.1
5.4 Housing	616814	579082	625520	631708	2.4	9.1
5.5 Education Loans	58118	59497	58881	59415	2.2	-0.1
5.6 Renewable Energy	3538	2073	3750	4191	18.5	102.1
5.7 Social Infrastructure	2483	2778	2412	2402	-3.3	-13.6
5.8 Export Credit	23330	22584	15577	16909	-27.5	-25.1
5.9 Others	37159	38287	46305	43969	18.3	14.8
5.10 Weaker Sections including net PSLC- SF/MF	1180928	1046402	1317533	1337739	13.3	27.8

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 93 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.

Note 3: Credit data are adjusted for past reporting errors by select SCBs from December 2021 onwards.

¹ Micro & Small includes credit to micro & small industries in the manufacturing sector.

² NBFCs include HFCs, PFIs, Microfinance Institutions (MFIs), NBFCs engaged in gold loan and others.

³ Other Services include Mutual Fund (MFs), Banking and Finance other than NBFCs and MFs and other services which are not indicated elsewhere under services.

⁴ Agriculture and Allied Activities also include priority sector lending certificates (PSLCs).

⁵ Micro and Small Enterprises include credit to micro and small enterprises in manufacturing and services sector and also include PSLCs.

⁶ Medium Enterprises include credit to medium enterprises in the manufacturing and services sector.

No. 16: Industry-wise Deployment of Gross Bank Credit

(₹ Crore)

Industry	Outstanding as on				Growth (%)	
	Mar. 25, 2022	2021	2022		Financial year so far	Y-o-Y
		Oct. 22	Sep.23	Oct. 21	2022-23	2022
	1	2	3	4	%	%
2 Industries (2.1 to 2.19)	3156067	2897434	3240817	3290584	4.3	13.6
2.1 Mining & Quarrying (incl. Coal)	49135	46832	50180	51904	5.6	10.8
2.2 Food Processing	173246	147467	160107	157632	-9.0	6.9
2.2.1 Sugar	26307	18154	18968	17878	-32.0	-1.5
2.2.2 Edible Oils & Vanaspati	18246	16456	15919	15581	-14.6	-5.3
2.2.3 Tea	5728	5909	6112	6124	6.9	3.7
2.2.4 Others	122965	106948	119108	118049	-4.0	10.4
2.3 Beverage & Tobacco	18176	16664	17776	19403	6.7	16.4
2.4 Textiles	224026	204270	213404	213205	-4.8	4.4
2.4.1 Cotton Textiles	90384	80309	81299	81801	-9.5	1.9
2.4.2 Jute Textiles	3509	2614	3719	3698	5.4	41.5
2.4.3 Man-Made Textiles	38371	37576	38917	39173	2.1	4.3
2.4.4 Other Textiles	91761	83771	89470	88533	-3.5	5.7
2.5 Leather & Leather Products	11573	10897	11551	11556	-0.1	6.1
2.6 Wood & Wood Products	16294	15374	17441	17587	7.9	14.4
2.7 Paper & Paper Products	40565	38968	41428	41959	3.4	7.7
2.8 Petroleum, Coal Products & Nuclear Fuels	107333	86619	151473	157974	47.2	82.4
2.9 Chemicals & Chemical Products	196363	177808	215149	222461	13.3	25.1
2.9.1 Fertiliser	33160	28119	36852	36990	11.5	31.5
2.9.2 Drugs & Pharmaceuticals	61093	54628	64211	66725	9.2	22.1
2.9.3 Petro Chemicals	19622	22236	21860	21986	12.0	-1.1
2.9.4 Others	82486	72826	92225	96761	17.3	32.9
2.10 Rubber, Plastic & their Products	72013	64197	75487	76543	6.3	19.2
2.11 Glass & Glassware	5952	5942	6502	6547	10.0	10.2
2.12 Cement & Cement Products	47910	47801	50308	51558	7.6	7.9
2.13 Basic Metal & Metal Product	288531	272153	306675	310563	7.6	14.1
2.13.1 Iron & Steel	187584	180943	205442	210102	12.0	16.1
2.13.2 Other Metal & Metal Product	100946	91210	101233	100460	-0.5	10.1
2.14 All Engineering	167966	151305	173176	172239	2.5	13.8
2.14.1 Electronics	38179	37039	40124	40596	6.3	9.6
2.14.2 Others	129787	114266	133053	131643	1.4	15.2
2.15 Vehicles, Vehicle Parts & Transport Equipment	89896	83829	91973	94684	5.3	12.9
2.16 Gems & Jewellery	80512	74278	78021	77970	-3.2	5.0
2.17 Construction	117724	115821	120041	118452	0.6	2.3
2.18 Infrastructure	1195027	1117055	1214880	1238260	3.6	10.9
2.18.1 Power	611410	584608	620963	628330	2.8	7.5
2.18.2 Telecommunications	130318	110957	131526	131426	0.9	18.4
2.18.3 Roads	270395	245186	278943	279031	3.2	13.8
2.18.4 Airports	6646	7605	8572	8987	35.2	18.2
2.18.5 Ports	8886	9987	8556	8360	-5.9	-16.3
2.18.6 Railways	10512	14075	11825	11844	12.7	-15.9
2.18.7 Other Infrastructure	156860	144636	154494	170283	8.6	17.7
2.19 Other Industries	253823	220156	245244	250088	-1.5	13.6

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	2021	2022						
		Sep, 24	Jul, 15	Jul, 29	Aug, 12	Aug, 26	Sep, 09	Sep, 23	Sep, 30
	1	2	3	4	5	6	7	8	9
Number of Reporting Banks	32	33	32	32	32	32	32	32	32
1 Aggregate Deposits (2.1.1.2+2.2.1.2)	125859.6	125238.2	127253.1	127577.4	126371.0	126668.7	125456.0	125607.0	125744.1
2 Demand and Time Liabilities									
2.1 Demand Liabilities	23736.9	26961.0	25147.5	25689.4	24733.9	25477.4	25452.0	24814.7	25372.4
2.1.1 Deposits									
2.1.1.1 Inter-Bank	4896.9	5734.8	6406.5	6672.8	6166.0	6345.3	6389.5	5985.6	6051.1
2.1.1.2 Others	13,899.4	14619.8	13025.9	13286.2	12908.4	13589.1	12910.3	12940.7	13334.5
2.1.2 Borrowings from Banks	0.0	999.7	514.9	799.6	544.6	599.7	799.7	719.7	699.7
2.1.3 Other Demand Liabilities	4940.6	5606.6	5200.3	4930.9	5114.8	4943.3	5352.5	5168.8	5287.2
2.2 Time Liabilities	179957.5	168977.8	175431.5	174829.0	175741.7	174699.5	174849.2	173833.4	173493.0
2.2.1 Deposits									
2.2.1.1 Inter-Bank	65333.7	56505.0	57851.2	57194.2	58108.6	57214.2	57155.5	57325.3	56993.6
2.2.1.2 Others	111960.2	110618.4	114227.2	114291.2	113462.5	113079.6	112545.7	112666.3	112409.7
2.2.2 Borrowings from Banks	630.0	911.0	948.0	939.1	1712.6	1957.6	2641.6	1354.7	1580.1
2.2.3 Other Time Liabilities	2033.7	943.3	2405.1	2404.6	2457.9	2448.0	2506.4	2487.2	2509.7
3 Borrowing from Reserve Bank	0.0	35.0	0.0	0.0	0.0	0.0	0.0	0.0	35.0
4 Borrowings from a notified bank / Government	63559.8	54926.2	57306.1	56814.8	60228.1	62522.8	63238.5	70581.6	70718.0
4.1 Demand	15691.8	12031.5	12304.3	12659.5	13145.8	12585.2	12792.5	13643.4	13633.4
4.2 Time	47868.0	42894.6	45001.8	44155.3	47082.4	49937.6	50446.0	56938.2	57084.6
5 Cash in Hand and Balances with Reserve Bank	8151.1	8940.2	10318.6	10617.7	10622.0	10250.5	10265.4	10404.2	10969.0
5.1 Cash in Hand	570.3	640.7	897.7	773.1	646.7	692.1	729.0	883.1	821.6
5.2 Balance with Reserve Bank	7580.8	8299.5	9420.9	9844.6	9975.3	9558.4	9536.3	9521.1	10147.4
6 Balances with Other Banks in Current Account	1148.1	1223.7	1306.8	1336.2	1255.5	1126.8	1201.5	1294.5	1567.2
7 Investments in Government Securities	64455.2	70603.5	71053.8	71000.9	72194.8	71873.8	72378.0	72476.3	72520.1
8 Money at Call and Short Notice	28835.7	20170.1	21929.3	20921.9	18398.1	18737.5	17513.1	23215.3	18272.2
9 Bank Credit (10.1+11)	114631.6	106670.5	118465.3	118533.2	119493.3	120016.1	121183.1	121536.0	121551.1
10 Advances									
10.1 Loans, Cash-Credits and Overdrafts	114612.1	106650.9	118444.4	118512.3	119472.4	119992.7	121159.0	121513.0	121528.1
10.2 Due from Banks	89429.1	88508.1	103716.8	104735.3	105932.3	107006.1	108547.6	112332.7	115486.6
11 Bills Purchased and Discounted	19.5	19.6	20.9	20.9	20.9	23.3	24.1	23.1	23.1

Prices and Production

No. 18: Consumer Price Index (Base: 2012=100)

Group/Sub group	2021-22			Rural			Urban			Combined		
	Rural	Urban	Combined	Oct.21	Sep.22	Oct.22(P)	Oct.21	Sep.22	Oct.22(P)	Oct.21	Sep.22	Oct.22(P)
	1	2	3	4	5	6	7	8	9	10	11	12
1 Food and beverages	162.8	168.7	165.0	165.5	175.5	177.3	171.5	181.8	183.3	167.7	177.8	179.5
1.1 Cereals and products	146.4	150.4	147.6	146.1	162.9	164.6	150.1	164.9	166.4	147.4	163.5	165.2
1.2 Meat and fish	200.4	206.5	202.6	202.5	206.7	208.8	208.4	213.7	214.9	204.6	209.2	210.9
1.3 Egg	173.3	176.0	174.4	170.1	169.0	170.3	173.0	170.9	171.9	171.2	169.7	170.9
1.4 Milk and products	158.3	159.0	158.6	158.4	169.5	170.9	159.2	170.1	171.0	158.7	169.7	170.9
1.5 Oils and fats	192.2	172.4	184.9	198.8	194.1	191.6	176.6	179.3	177.7	190.6	188.7	186.5
1.6 Fruits	155.3	163.5	159.2	152.6	164.1	162.2	159.3	167.5	165.7	155.7	165.7	163.8
1.7 Vegetables	156.1	192.8	168.5	170.4	176.9	184.8	214.4	220.8	228.6	185.3	191.8	199.7
1.8 Pulses and products	164.1	164.4	164.2	165.2	169.0	169.7	165.3	169.2	169.9	165.2	169.1	169.8
1.9 Sugar and confectionery	117.4	119.1	118.0	121.6	120.8	121.1	122.5	123.1	123.4	121.9	121.6	121.9
1.10 Spices	171.2	167.5	170.0	170.6	199.1	201.6	166.8	193.6	196.3	169.3	197.3	199.8
1.11 Non-alcoholic beverages	167.8	154.7	162.3	168.8	175.4	175.8	155.4	161.1	161.6	163.2	169.4	169.9
1.12 Prepared meals, snacks, sweets	173.0	175.8	174.3	173.6	184.8	185.6	175.9	190.4	191.6	174.7	187.4	188.4
2 Pan, tobacco and intoxicants	190.3	196.5	191.9	191.2	194.5	194.9	197.0	199.7	200.1	192.7	195.9	196.3
3 Clothing and footwear	168.2	158.4	164.3	168.3	184.5	185.9	158.3	173.0	173.6	164.3	179.9	181.0
3.1 Clothing	168.8	160.9	165.7	168.9	184.7	186.1	160.8	175.0	175.5	165.7	180.9	181.9
3.2 Footwear	164.5	144.7	156.3	164.8	183.3	184.4	144.4	161.7	162.6	156.3	174.3	175.3
4 Housing	--	163.0	163.0	--	--	--	163.6	169.5	171.1	163.6	169.5	171.1
5 Fuel and light	164.0	159.8	162.4	165.5	179.7	180.8	162.2	179.2	180.0	164.2	179.5	180.5
6 Miscellaneous	164.1	156.1	160.2	164.7	173.1	173.9	157.0	166.1	166.8	161.0	169.7	170.5
6.1 Household goods and services	161.8	153.5	157.9	162.0	173.6	174.4	154.3	165.0	166.0	158.4	169.5	170.4
6.2 Health	172.0	163.3	168.6	172.5	180.2	181.2	163.5	173.8	174.6	169.1	177.8	178.7
6.3 Transport and communication	157.9	150.0	153.7	159.5	166.9	167.4	152.2	158.2	158.8	155.7	162.3	162.9
6.4 Recreation and amusement	162.7	154.8	158.2	163.2	170.0	170.6	155.1	165.8	166.3	158.6	167.6	168.2
6.5 Education	168.4	160.1	163.5	169.0	176.2	176.5	160.3	170.9	171.2	163.9	173.1	173.4
6.6 Personal care and effects	161.3	160.8	161.1	161.1	170.8	172.0	160.3	171.1	172.3	160.8	170.9	172.1
General Index (All Groups)	164.5	163.1	163.8	166.3	176.4	177.9	164.6	174.1	175.3	165.5	175.3	176.7

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	2021-22	2021	2022	
				Oct.	Sep.	Oct.
	1	2	3	4	5	6
1 Consumer Price Index for Industrial Workers	2016	2.88	123.6	124.9	131.3	132.5
2 Consumer Price Index for Agricultural Labourers	1986-87	5.89	1075	1081	1149	1159
3 Consumer Price Index for Rural Labourers	1986-87	—	1084	1090	1161	1170

Source: Labour Bureau, Ministry of Labour and Employment, Government of India.

No. 20: Monthly Average Price of Gold and Silver in Mumbai

Item	2021-22	2021	2022	
		Oct.	Sep.	Oct.
	1	2	3	4
1 Standard Gold (₹ per 10 grams)	47999	47219	49914	50506
2 Silver (₹ per kilogram)	65426	62890	55232	57505

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	2021-22	2021	2022		
			Oct.	Aug.	Sep. (P)	Oct. (P)
	1	2	3	4	5	6
1 ALL COMMODITIES	100.000	139.4	140.7	153.2	152.1	152.5
1.1 PRIMARY ARTICLES	22.618	160.7	163.0	178.3	176.2	181.0
1.1.1 FOOD ARTICLES	15.256	167.3	171.6	182.0	182.2	185.9
1.1.1.1 Food Grains (Cereals+Pulses)	3.462	163.5	163.7	177.0	178.5	179.6
1.1.1.2 Fruits & Vegetables	3.475	187.6	208.2	216.4	215.6	231.0
1.1.1.3 Milk	4.440	156.9	157.3	165.5	165.5	166.0
1.1.1.4 Eggs, Meat & Fish	2.402	164.0	161.4	171.2	171.3	167.8
1.1.1.5 Condiments & Spices	0.529	159.8	161.6	187.0	191.2	191.4
1.1.1.6 Other Food Articles	0.948	168.3	164.5	174.9	174.7	180.3
1.1.2 NON-FOOD ARTICLES	4.119	158.1	153.7	175.1	168.8	167.9
1.1.2.1 Fibres	0.839	158.4	156.1	220.6	207.4	194.2
1.1.2.2 Oil Seeds	1.115	214.4	199.7	207.3	196.1	189.0
1.1.2.3 Other non-food Articles	1.960	119.9	119.9	129.8	129.4	131.1
1.1.2.4 Floriculture	0.204	217.0	217.9	246.4	239.0	298.5
1.1.3 MINERALS	0.833	197.2	178.7	192.9	192.9	185.6
1.1.3.1 Metallic Minerals	0.648	193.3	169.4	177.5	177.5	168.2
1.1.3.2 Other Minerals	0.185	211.0	211.2	247.0	247.0	246.7
1.1.4 CRUDE PETROLEUM & NATURAL GAS	2.410	110.3	118.9	155.3	145.3	170.7
1.2 FUEL & POWER	13.152	124.6	126.0	159.2	157.8	155.2
1.2.1 COAL	2.138	129.0	128.9	134.3	130.9	134.3
1.2.1.1 Coking Coal	0.647	143.0	143.4	143.4	143.4	143.4
1.2.1.2 Non-Coking Coal	1.401	119.8	119.8	119.8	119.8	119.8
1.2.1.3 Lignite	0.090	170.5	166.0	294.6	212.7	294.3
1.2.2 MINERAL OILS	7.950	126.2	128.9	174.6	171.7	166.4
1.2.3 ELECTRICITY	3.064	117.4	116.7	136.5	140.6	140.6
1.3 MANUFACTURED PRODUCTS	64.231	135.0	135.9	143.2	142.5	141.9
1.3.1 MANUFACTURE OF FOOD PRODUCTS	9.122	157.9	158.5	166.7	163.5	163.4
1.3.1.1 Processing and Preserving of meat	0.134	142.8	142.4	143.4	144.1	141.4
1.3.1.2 Processing and Preserving of fish, Crustaceans, Molluscs and products thereof	0.204	144.1	146.5	151.0	154.3	140.6
1.3.1.3 Processing and Preserving of fruit and Vegetables	0.138	122.3	122.1	125.2	124.5	126.4
1.3.1.4 Vegetable and Animal oils and Fats	2.643	187.2	187.3	186.4	174.8	174.2
1.3.1.5 Dairy products	1.165	149.4	148.8	163.9	165.2	166.8
1.3.1.6 Grain mill products	2.010	145.6	146.0	161.5	162.8	163.3
1.3.1.7 Starches and Starch products	0.110	133.3	130.3	159.4	160.6	163.4
1.3.1.8 Bakery products	0.215	146.2	145.6	163.7	163.9	162.7
1.3.1.9 Sugar, Molasses & honey	1.163	122.9	127.9	126.4	126.7	127.5
1.3.1.10 Cocoa, Chocolate and Sugar confectionery	0.175	130.5	131.3	134.4	136.1	135.3
1.3.1.11 Macaroni, Noodles, Couscous and Similar farinaceous products	0.026	136.7	139.0	157.2	142.2	162.5
1.3.1.12 Tea & Coffee products	0.371	171.1	168.4	186.5	180.8	176.9
1.3.1.13 Processed condiments & salt	0.163	157.5	155.9	176.5	177.2	178.0
1.3.1.14 Processed ready to eat food	0.024	137.0	135.4	139.4	139.8	140.7
1.3.1.15 Health supplements	0.225	153.5	154.6	180.3	183.4	184.4
1.3.1.16 Prepared animal feeds	0.356	200.9	201.0	212.6	207.5	207.8
1.3.2 MANUFACTURE OF BEVERAGES	0.909	126.8	127.4	128.3	128.4	128.7
1.3.2.1 Wines & spirits	0.408	123.6	123.7	128.3	128.7	129.2
1.3.2.2 Malt liquors and Malt	0.225	130.5	131.6	134.8	134.9	134.5
1.3.2.3 Soft drinks; Production of mineral waters and Other bottled waters	0.275	128.6	129.4	123.0	122.7	123.3
1.3.3 MANUFACTURE OF TOBACCO PRODUCTS	0.514	160.2	160.2	164.2	163.8	163.8
1.3.3.1 Tobacco products	0.514	160.2	160.2	164.2	163.8	163.8

No. 21: Wholesale Price Index (Contd.)

(Base: 2011-12 = 100)

Commodities	Weight	2021-22	2021	2022		
			Oct.	Aug.	Sep. (P)	Oct. (P)
1.3.4 MANUFACTURE OF TEXTILES	4.881	135.2	134.8	146.5	145.0	143.4
1.3.4.1 Preparation and Spinning of textile fibres	2.582	128.2	127.1	139.0	136.5	133.9
1.3.4.2 Weaving & Finishing of textiles	1.509	146.8	147.0	159.8	159.6	159.7
1.3.4.3 Knitted and Crocheted fabrics	0.193	125.5	124.1	134.5	134.3	131.8
1.3.4.4 Made-up textile articles, Except apparel	0.299	138.7	138.9	155.8	155.2	154.2
1.3.4.5 Cordage, Rope, Twine and Netting	0.098	168.5	169.9	161.0	160.9	156.1
1.3.4.6 Other textiles	0.201	126.2	127.8	133.9	132.6	130.7
1.3.5 MANUFACTURE OF WEARING APPAREL	0.814	143.1	144.2	149.3	149.9	149.3
1.3.5.1 Manufacture of Wearing Apparel (woven), Except fur Apparel	0.593	142.0	142.9	148.0	148.4	147.9
1.3.5.2 Knitted and Crocheted apparel	0.221	145.8	147.8	152.5	153.7	153.2
1.3.6 MANUFACTURE OF LEATHER AND RELATED PRODUCTS	0.535	119.2	119.0	123.3	123.5	122.9
1.3.6.1 Tanning and Dressing of leather; Dressing and Dyeing of fur	0.142	103.4	104.4	106.7	107.8	106.9
1.3.6.2 Luggage, HandbAgs, Saddlery and Harness	0.075	141.5	140.0	140.8	141.3	140.3
1.3.6.3 Footwear	0.318	121.0	120.5	126.6	126.3	126.0
1.3.7 MANUFACTURE OF WOOD AND PRODUCTS OF WOOD AND CORK	0.772	141.0	141.4	144.1	143.3	142.9
1.3.7.1 Saw milling and Planing of wood	0.124	128.8	130.8	138.1	138.8	137.7
1.3.7.2 Veneer sheets; Manufacture of plywood, Laminboard, Particle board and Other panels and Boards	0.493	141.9	141.9	142.4	141.1	140.7
1.3.7.3 Builder's carpentry and Joinery	0.036	193.9	194.5	203.1	205.9	205.7
1.3.7.4 Wooden containers	0.119	134.1	134.2	139.7	138.4	138.4
1.3.8 MANUFACTURE OF PAPER AND PAPER PRODUCTS	1.113	137.5	137.2	154.5	154.6	153.6
1.3.8.1 Pulp, Paper and Paperboard	0.493	141.4	141.4	161.2	161.2	159.9
1.3.8.2 Corrugated paper and Paperboard and Containers of paper and Paperboard	0.314	137.8	139.5	150.6	150.2	149.4
1.3.8.3 Other articles of paper and Paperboard	0.306	131.0	128.0	147.8	148.5	147.8
1.3.9 PRINTING AND REPRODUCTION OF RECORDED MEDIA	0.676	157.8	157.0	167.6	168.2	171.1
1.3.9.1 Printing	0.676	157.8	157.0	167.6	168.2	171.1
1.3.10 MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS	6.465	133.5	134.3	146.6	146.2	146.0
1.3.10.1 Basic chemicals	1.433	143.8	146.5	162.3	161.0	160.2
1.3.10.2 Fertilizers and Nitrogen compounds	1.485	129.6	128.3	144.9	144.8	145.0
1.3.10.3 Plastic and Synthetic rubber in primary form	1.001	140.3	141.9	142.7	142.4	142.7
1.3.10.4 Pesticides and Other agrochemical products	0.454	132.1	131.6	145.9	145.0	144.3
1.3.10.5 Paints, Varnishes and Similar coatings, Printing ink and Mastics	0.491	130.4	131.0	146.1	146.0	145.7
1.3.10.6 Soap and Detergents, Cleaning and Polishing preparations, Perfumes and Toilet preparations	0.612	128.1	129.0	141.4	142.0	142.8
1.3.10.7 Other chemical products	0.692	130.3	131.0	143.4	143.1	143.8
1.3.10.8 Man-made fibres	0.296	106.6	108.3	113.2	112.4	109.5
1.3.11 MANUFACTURE OF PHARMACEUTICALS, MEDICINAL CHEMICAL AND BOTANICAL PRODUCTS	1.993	135.9	136.0	140.6	140.9	141.4
1.3.11.1 Pharmaceuticals, Medicinal chemical and Botanical products	1.993	135.9	136.0	140.6	140.9	141.4
1.3.12 MANUFACTURE OF RUBBER AND PLASTICS PRODUCTS	2.299	124.8	126.7	129.4	128.9	129.3
1.3.12.1 Rubber Tyres and Tubes; Retreading and Rebuilding of Rubber Tyres	0.609	104.3	104.1	112.2	112.3	113.4
1.3.12.2 Other Rubber Products	0.272	101.9	102.2	108.1	108.0	106.2
1.3.12.3 Plastics products	1.418	138.0	141.2	140.9	140.0	140.6
1.3.13 MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS	3.202	123.7	123.8	133.5	135.2	133.6
1.3.13.1 Glass and Glass products	0.295	139.1	137.2	156.1	157.9	158.4
1.3.13.2 Refractory products	0.223	115.6	115.4	120.0	120.2	119.1
1.3.13.3 Clay Building Materials	0.121	119.3	124.3	132.5	134.9	136.5
1.3.13.4 Other Porcelain and Ceramic Products	0.222	112.9	111.6	118.8	117.0	117.5
1.3.13.5 Cement, Lime and Plaster	1.645	126.4	126.5	137.1	140.1	137.0

No. 21: Wholesale Price Index (Contd.)

(Base: 2011-12 = 100)

Commodities	Weight	2021-22	2021	2022		
			Oct.	Aug.	Sep. (P)	Oct. (P)
1.3.13.6 Articles of Concrete, Cement and Plaster	0.292	129.2	128.4	134.9	134.4	134.5
1.3.13.7 Cutting, Shaping and Finishing of Stone	0.234	122.2	123.4	125.8	126.6	125.9
1.3.13.8 Other Non-Metallic Mineral Products	0.169	90.6	92.4	105.4	105.6	105.2
1.3.14 MANUFACTURE OF BASIC METALS	9.646	140.1	143.9	148.9	146.8	145.8
1.3.14.1 Inputs into steel making	1.411	150.8	161.6	163.0	160.0	156.1
1.3.14.2 Metallic Iron	0.653	147.7	151.2	170.7	168.7	164.2
1.3.14.3 Mild Steel - Semi Finished Steel	1.274	119.1	120.9	127.0	126.6	126.1
1.3.14.4 Mild Steel -Long Products	1.081	137.4	140.8	149.4	147.2	147.1
1.3.14.5 Mild Steel - Flat products	1.144	157.5	159.7	153.4	150.3	151.4
1.3.14.6 Alloy steel other than Stainless Steel- Shapes	0.067	133.7	136.1	147.0	147.6	150.5
1.3.14.7 Stainless Steel - Semi Finished	0.924	141.7	147.2	154.6	151.4	146.5
1.3.14.8 Pipes & tubes	0.205	155.9	159.9	174.6	176.4	176.6
1.3.14.9 Non-ferrous metals incl. precious metals	1.693	139.7	142.9	141.8	139.4	140.2
1.3.14.10 Castings	0.925	118.9	119.0	130.7	128.8	130.4
1.3.14.11 Forgings of steel	0.271	159.0	157.6	172.9	171.4	173.4
1.3.15 MANUFACTURE OF FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT	3.155	130.5	130.9	140.0	140.3	137.5
1.3.15.1 Structural Metal Products	1.031	123.9	123.5	134.6	134.9	131.4
1.3.15.2 Tanks, Reservoirs and Containers of Metal	0.660	156.2	157.6	161.6	160.6	157.4
1.3.15.3 Steam generators, Except Central Heating Hot Water Boilers	0.145	96.1	97.1	97.3	98.3	99.0
1.3.15.4 Forging, Pressing, Stamping and Roll-Forming of Metal; Powder Metallurgy	0.383	117.5	117.9	136.9	138.6	134.2
1.3.15.5 Cutlery, Hand Tools and General Hardware	0.208	108.2	108.7	112.6	112.6	113.2
1.3.15.6 Other Fabricated Metal Products	0.728	136.5	136.9	146.0	146.6	144.5
1.3.16 MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS	2.009	113.7	113.4	116.8	117.3	117.5
1.3.16.1 Electronic Components	0.402	106.0	105.7	116.2	115.9	116.5
1.3.16.2 Computers and Peripheral Equipment	0.336	134.7	134.7	134.9	134.9	134.9
1.3.16.3 Communication Equipment	0.310	121.7	119.3	129.5	129.5	129.6
1.3.16.4 Consumer Electronics	0.641	102.1	102.8	99.3	100.8	101.0
1.3.16.5 Measuring, Testing, Navigating and Control equipment	0.181	108.4	107.1	113.1	113.1	113.1
1.3.16.6 Watches and Clocks	0.076	145.6	145.4	152.6	152.8	152.7
1.3.16.7 Irradiation, Electromedical and Electrotherapeutic equipment	0.055	106.1	108.6	107.6	110.4	110.4
1.3.16.8 Optical instruments and Photographic equipment	0.008	98.3	98.5	101.6	101.6	101.6
1.3.17 MANUFACTURE OF ELECTRICAL EQUIPMENT	2.930	122.3	123.2	128.6	129.1	129.0
1.3.17.1 Electric motors, Generators, Transformers and Electricity distribution and Control apparatus	1.298	119.7	120.6	127.0	128.2	128.1
1.3.17.2 Batteries and Accumulators	0.236	121.8	123.8	132.2	131.9	132.1
1.3.17.3 Fibre optic cables for data transmission or live transmission of images	0.133	103.1	103.7	117.0	118.7	119.9
1.3.17.4 Other electronic and Electric wires and Cables	0.428	140.7	141.9	142.1	141.3	141.1
1.3.17.5 Wiring devices, Electric lighting & display equipment	0.263	114.5	114.9	116.4	117.5	117.2
1.3.17.6 Domestic appliances	0.366	128.4	128.7	135.1	134.8	134.8
1.3.17.7 Other electrical equipment	0.206	113.2	113.2	117.3	117.0	117.4
1.3.18 MANUFACTURE OF MACHINERY AND EQUIPMENT	4.789	120.0	120.4	126.1	126.3	126.3
1.3.18.1 Engines and Turbines, Except aircraft, Vehicle and Two wheeler engines	0.638	119.2	120.6	127.5	127.9	127.6
1.3.18.2 Fluid power equipment	0.162	122.1	121.4	127.3	127.3	127.5
1.3.18.3 Other pumps, Compressors, Taps and Valves	0.552	115.1	115.0	117.9	117.6	117.2
1.3.18.4 Bearings, Gears, Gearing and Driving elements	0.340	118.1	118.3	124.5	124.4	124.0
1.3.18.5 Ovens, Furnaces and Furnace burners	0.008	74.2	73.2	78.9	78.7	79.8
1.3.18.6 Lifting and Handling equipment	0.285	120.0	120.0	125.6	124.7	125.5

No. 21: Wholesale Price Index (Concl.)

(Base: 2011-12 = 100)

Commodities	Weight	2021-22	2021	2022			
			Oct.	Aug.	Sep. (P)	Oct. (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	133.4	133.0	141.6	143.1	141.8	
1.3.18.9 Agricultural and Forestry machinery	0.833	128.4	129.4	136.4	136.9	136.9	
1.3.18.10 Metal-forming machinery and Machine tools	0.224	114.2	116.0	121.3	120.7	121.2	
1.3.18.11 Machinery for mining, Quarrying and Construction	0.371	78.2	78.3	84.5	84.5	85.0	
1.3.18.12 Machinery for food, Beverage and Tobacco processing	0.228	130.1	131.9	130.0	129.8	129.6	
1.3.18.13 Machinery for textile, Apparel and Leather production	0.192	125.3	123.7	129.9	130.1	132.6	
1.3.18.14 Other special-purpose machinery	0.468	134.7	134.2	140.0	140.3	140.5	
1.3.18.15 Renewable electricity generating equipment	0.046	66.6	66.7	68.5	68.7	69.2	
1.3.19 MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS	4.969	122.7	122.9	127.0	128.7	128.0	
1.3.19.1 Motor vehicles	2.600	122.6	122.3	124.4	127.3	125.7	
1.3.19.2 Parts and Accessories for motor vehicles	2.368	122.7	123.6	129.9	130.3	130.6	
1.3.20 MANUFACTURE OF OTHER TRANSPORT EQUIPMENT	1.648	131.7	132.4	137.2	136.9	137.6	
1.3.20.1 Building of ships and Floating structures	0.117	158.9	158.9	163.5	163.6	163.6	
1.3.20.2 Railway locomotives and Rolling stock	0.110	104.4	105.1	105.5	108.3	108.3	
1.3.20.3 Motor cycles	1.302	131.0	131.8	137.1	136.5	137.4	
1.3.20.4 Bicycles and Invalid carriages	0.117	137.2	137.3	140.8	140.7	140.4	
1.3.20.5 Other transport equipment	0.002	135.9	136.9	150.5	152.9	149.6	
1.3.21 MANUFACTURE OF FURNITURE	0.727	150.1	151.0	157.2	157.5	156.4	
1.3.21.1 Furniture	0.727	150.1	151.0	157.2	157.5	156.4	
1.3.22 OTHER MANUFACTURING	1.064	137.9	138.1	148.0	145.3	144.9	
1.3.22.1 Jewellery and Related articles	0.996	136.0	136.2	146.7	144.0	143.4	
1.3.22.2 Musical instruments	0.001	192.3	190.5	190.5	180.3	180.3	
1.3.22.3 Sports goods	0.012	140.4	141.1	149.3	150.7	151.7	
1.3.22.4 Games and Toys	0.005	150.9	149.6	159.3	158.7	158.3	
1.3.22.5 Medical and Dental instruments and Supplies	0.049	171.8	172.9	172.0	169.7	170.5	
2 FOOD INDEX	24.378	163.8	166.7	176.2	175.2	177.5	

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	2020-21	2021-22	April-September		September	
				2021-22	2022-23	2021	2022
	1	2	3	4	5	6	7
General Index	100.00	118.1	131.6	126.2	135.0	129.5	133.5
1 Sectoral Classification							
1.1 Mining	14.37	101.0	113.3	104.1	108.5	95.1	99.5
1.2 Manufacturing	77.63	117.2	131.0	125.4	133.9	131.9	134.3
1.3 Electricity	7.99	157.6	170.1	174.4	193.2	167.9	187.4
2 Use-Based Classification							
2.1 Primary Goods	34.05	118.1	129.5	124.1	135.5	117.3	128.2
2.2 Capital Goods	8.22	75.9	88.7	83.2	97.2	93.3	102.9
2.3 Intermediate Goods	17.22	124.7	143.9	138.8	148.2	142.9	145.8
2.4 Infrastructure/ Construction Goods	12.34	124.7	148.2	141.5	151.8	145.0	155.8
2.5 Consumer Durables	12.84	101.2	113.8	107.7	119.2	131.0	125.1
2.6 Consumer Non-Durables	15.33	142.1	146.7	143.2	139.2	147.3	136.9

Source : Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India.

Government Accounts and Treasury Bills

No. 23: Union Government Accounts at a Glance

(₹ Crore)

Item	Financial Year	April - October			
	2022-23 (Budget Estimates)	2022-23 (Actuals)	2021-22 (Actuals)	Percentage to Budget Estimates	
				2022-23	2021-22
	1	2	3	4	5
1 Revenue Receipts	2204422	1349882	1259977	61.2	70.5
1.1 Tax Revenue (Net)	1934771	1171103	1053135	60.5	68.1
1.2 Non-Tax Revenue	269651	178779	206842	66.3	85.1
2 Non-Debt Capital Receipt	79291	35692	19722	45.0	10.5
2.1 Recovery of Loans	14291	11102	10358	77.7	79.7
2.2 Other Receipts	65000	24590	9364	37.8	5.4
3 Total Receipts (excluding borrowings) (1+2)	2283713	1385574	1279699	60.7	64.7
4 Revenue Expenditure	3194663	1734697	1573455	54.3	53.7
<i>of which:</i>					
4.1 Interest Payments	940651	481172	401187	51.2	49.5
5 Capital Expenditure	750246	409014	253270	54.5	45.7
6 Total Expenditure (4+5)	3944909	2143711	1826725	54.3	52.4
7 Revenue Deficit (4-1)	990241	384815	313478	38.9	27.5
8 Fiscal Deficit (6-3)	1661196	758137	547026	45.6	36.3
9 Gross Primary Deficit (8-4.1)	720545	276965	145839	38.4	20.9

Source: Controller General of Accounts (CGA), Ministry of Finance, Government of India and Union Budget 2022-23.

No. 24: Treasury Bills – Ownership Pattern

(₹ Crore)

Item	2021-22	2021	2022					
	1	Oct. 29	Sep. 23	Sep. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28
		2	3	4	5	6	7	8
1 91-day								
1.1 Banks	5310	11660	13218	13248	10733	12099	11391	12575
1.2 Primary Dealers	16705	31896	28054	23970	20550	23586	25131	26472
1.3 State Governments	31320	68355	43050	37050	24280	30491	30491	30691
1.4 Others	72109	98459	88963	89322	95781	90823	87806	85273
2 182-day								
2.1 Banks	70130	81117	80231	79775	75536	73523	74405	67300
2.2 Primary Dealers	63669	55234	81912	80342	65545	66011	62133	62901
2.3 State Governments	15763	7593	34399	34399	34007	32507	31974	30974
2.4 Others	69259	83272	96229	88059	99475	92490	89619	89679
3 364-day								
3.1 Banks	112386	114147	107958	106495	105928	112230	110332	101183
3.2 Primary Dealers	160461	94931	183862	185459	182494	184014	185973	193611
3.3 State Governments	22836	19563	40358	41445	41395	41395	42013	41753
3.4 Others	118392	93755	139979	141190	143961	135878	134378	134444
4 14-day Intermediate								
4.1 Banks								
4.2 Primary Dealers								
4.3 State Governments	289362	178049	131741	117841	96249	126363	137925	153302
4.4 Others	659	1098	533	633	633	2373	1113	2614
Total Treasury Bills (Excluding 14 day Intermediate T Bills) #	758339	759982	938213	920753	899683	895047	885647	876858

14D intermediate T-Bills are non-marketable unlike 91D, 182D and 364D T-Bills. These bills are 'intermediate' by nature as these are liquidated to replenish shortfall in the daily minimum cash balances of State Governments

Note: Primary Dealers (PDs) include banks undertaking PD business.

No. 25: Auctions of Treasury Bills

(Amount in ₹ Crore)

Date of Auction	Notified Amount	Bids Received			Bids Accepted			Total Issue (6+7)	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	
91-day Treasury Bills										
2022-23										
Sep. 28	9000	106	30068	1032	37	8968	1032	10000	98.48	6.1776
Oct. 4	10000	154	42730	964	31	9966	964	10930	98.51	6.0783
Oct. 12	10000	118	26360	6427	50	9934	6427	16361	98.45	6.3145
Oct. 19	10000	115	32082	3261	50	9940	3261	13201	98.44	6.3563
Oct. 27	10000	94	22594	258	53	9953	258	10210	98.43	6.3994
182-day Treasury Bills										
2022-23										
Sep. 28	7000	132	22041	1017	62	6983	1017	8000	96.80	6.6400
Oct. 4	6000	163	19821	135	62	5973	135	6108	96.81	6.5996
Oct. 12	6000	179	27478	55	28	5945	55	6000	96.74	6.7647
Oct. 19	6000	165	18266	1687	79	5925	1687	7612	96.75	6.7400
Oct. 27	6000	145	20182	36	47	5964	36	6000	96.76	6.7195
364-day Treasury Bills										
2022-23										
Sep. 28	5000	127	18501	1120	34	4968	1120	6088	93.65	6.7966
Oct. 4	6000	171	21081	32	38	5968	32	6000	93.66	6.7899
Oct. 12	6000	216	19624	41	82	5959	41	6000	93.46	7.0169
Oct. 19	6000	198	21781	659	54	5960	659	6618	93.53	6.9400
Oct. 27	6000	162	18720	74	87	5965	74	6040	93.54	6.9197

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
October	1, 2022	5.00-6.00	5.72
October	3, 2022	4.10-5.85	5.76
October	4, 2022	4.80-5.90	5.75
October	6, 2022	4.70-5.90	5.73
October	7, 2022	4.75-6.25	5.83
October	10, 2022	4.85-6.25	6.01
October	11, 2022	4.85-6.25	6.11
October	12, 2022	4.20-6.25	6.12
October	13, 2022	4.20-6.25	6.11
October	14, 2022	4.20-6.25	6.14
October	15, 2022	5.00-5.55	5.22
October	17, 2022	4.20-6.25	6.14
October	18, 2022	4.20-6.25	6.16
October	19, 2022	4.20-6.20	6.09
October	20, 2022	4.25-6.25	6.13
October	21, 2022	4.25-6.32	6.20
October	25, 2022	4.25-6.25	6.16
October	27, 2022	4.10-6.25	6.14
October	28, 2022	4.10-6.35	6.16
October	29, 2022	5.25-6.10	5.71
October	31, 2022	4.75-6.25	6.20
November	1, 2022	4.00-6.25	6.12
November	2, 2022	4.10-6.00	5.93
November	3, 2022	4.10-5.90	5.79
November	4, 2022	4.10-6.00	5.86
November	5, 2022	5.20-6.15	5.89
November	7, 2022	4.75-5.95	5.83
November	9, 2022	4.10-6.05	5.92
November	10, 2022	4.10-5.95	5.89
November	11, 2022	4.10-5.95	5.87
November	14, 2022	4.10-5.90	5.83
November	15, 2022	4.10-5.90	5.82

Note: Includes Notice Money.

No. 27: Certificates of Deposit

Item	2021	2022			
	Oct. 22	Sep. 9	Sep. 23	Oct. 7	Oct. 21
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	57366.48	243599.65	252148.25	226345.91	240840.76
1.1 Issued during the fortnight (₹ Crore)	410.21	21790.34	19760.15	11412.20	41536.05
2 Rate of Interest (per cent)	3.62-4.49	5.75-6.61	5.81-6.73	6.20-7.37	6.33-7.40

No. 28: Commercial Paper

Item	2021	2022			
	Oct. 31	Sep. 15	Sep. 30	Oct. 15	Oct. 31
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	379278.30	438644.65	400866.35	415849.40	373332.25
1.1 Reported during the fortnight (₹ Crore)	56178.95	76371.55	62062.80	33906.35	39745.20
2 Rate of Interest (per cent)	3.32-12.71	5.66-13.02	5.91-12.26	5.92-11.98	6.40-13.72

No. 29: Average Daily Turnover in Select Financial Markets

(₹ Crore)

Item	2021-22	2021	2022					
		Oct. 29	Sep. 23	Sep. 30	Oct. 7	Oct. 14	Oct. 21	Oct. 28
	1	2	3	4	5	6	7	8
1 Call Money	14515	14570	21730	21491	18551	17643	18469	15386
2 Notice Money	2122	2904	586	3219	287	4069	285	8931
3 Term Money	515	373	777	717	533	336	683	1675
4 Triparty Repo	618526	774300	698269	886850	650315	872635	759630	911559
5 Market Repo	383844	388328	465877	604797	465195	574839	478069	638020
6 Repo in Corporate Bond	4373	5351	1095	232	3408	5250	316	3253
7 Forex (US \$ million)	67793	92929	95271	121050	86602	87594	89923	97414
8 Govt. of India Dated Securities	51300	56616	62243	73979	70154	61647	64851	49563
9 State Govt. Securities	5570	5087	3304	3860	5257	2698	3283	7884
10 Treasury Bills								
10.1 91-Day	4690	3487	2553	5663	6285	4560	1909	1155
10.2 182-Day	3440	2329	5379	5473	9509	2618	2391	3203
10.3 364-Day	3530	1685	3659	2884	2355	2732	2022	1846
10.4 Cash Management Bills								
11 Total Govt. Securities (8+9+10)	68530	69203	77138	91858	93559	74254	74456	63652
11.1 RBI	—	38	1446	479	188	7	128	4

No. 30: New Capital Issues by Non-Government Public Limited Companies

(Amount in ₹ Crore)

Security & Type of Issue	2021-22		2021-22 (Apr.-Oct.)		2022-23 (Apr.-Oct.) *		Oct. 2021		Oct. 2022 *	
	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount
	1	2	3	4	5	6	7	8	9	10
1 Equity Shares	164	138894	77	54464	122	23654	18	3833	25	1419
1A Premium	154	136893	73	53388	111	22197	17	3638	25	1212
1.1 Public	121	112567	62	52860	89	21869	13	3047	20	1257
1.1.1 Premium	119	111314	61	52083	86	20993	12	2996	20	1112
1.2 Rights	43	26327	15	1604	33	1785	5	786	5	162
1.2.1 Premium	35	25580	12	1305	25	1203	5	643	5	100
2 Preference Shares	—	—	—	—	—	—	—	—	—	—
2.1 Public	—	—	—	—	—	—	—	—	—	—
2.2 Rights	—	—	—	—	—	—	—	—	—	—
3 Bonds & Debentures	28	11589	19	9082	20	4623	5	1999	4	920
3.1 Convertible	—	—	—	—	—	—	—	—	—	—
3.1.1 Public	—	—	—	—	—	—	—	—	—	—
3.1.2 Rights	—	—	—	—	—	—	—	—	—	—
3.2 Non-Convertible	28	11589	19	9082	20	4623	5	1999	4	920
3.2.1 Public	28	11589	19	9082	20	4623	5	1999	4	920
3.2.2 Rights	—	—	—	—	—	—	—	—	—	—
4 Total(1+2+3)	192	150484	96	63546	142	28278	23	5833	29	2338
4.1 Public	149	124157	81	61943	109	26493	18	5046	24	2176
4.2 Rights	43	26327	15	1604	33	1785	5	786	5	162

Note : 1. Since April 2020, monthly data on equity issues is compiled on the basis of their listing date.

2. Figures in the columns might not add up to the total due to rounding off numbers.

Source : Securities and Exchange Board of India.

* : Data is Provisional

External Sector

No. 31: Foreign Trade

Item	Unit	2021-22	2021	2022				
			Oct.	Jun.	Jul.	Aug.	Sep.	Oct.
		1	2	3	4	5	6	7
1 Exports	₹ Crore	3147021	267655	330205	305545	294636	284379	258514
	US \$ Million	422004	35728	42294	38384	37035	35445	31396
1.1 Oil	₹ Crore	503850	40123	82720	65344	67588	58687	51841
	US \$ Million	67472	5356	10595	8209	8496	7315	6296
1.2 Non-oil	₹ Crore	2643171	227532	247485	240201	227048	225692	206673
	US \$ Million	354533	30372	31699	30175	28540	28130	25100
2 Imports	₹ Crore	4572775	401833	504325	528217	508298	518869	485732
	US \$ Million	613052	53638	64595	66358	63893	64671	58991
2.1 Oil	₹ Crore	1207803	91988	149624	168196	153690	150792	149644
	US \$ Million	161810	12279	19164	21130	19319	18795	18174
2.2 Non-oil	₹ Crore	3364972	309845	354701	360021	354609	368077	336088
	US \$ Million	451242	41359	45431	45228	44574	45877	40817
3 Trade Balance	₹ Crore	-1425753	-134177	-174120	-222671	-213663	-234490	-227218
	US \$ Million	-191048	-17911	-22302	-27973	-26857	-29227	-27595
3.1 Oil	₹ Crore	-703953	-51865	-66904	-102852	-86102	-92105	-97802
	US \$ Million	-94339	-6923	-8569	-12921	-10823	-11480	-11878
3.2 Non-oil	₹ Crore	-721800	-82313	-107216	-119820	-127561	-142385	-129415
	US \$ Million	-96709	-10987	-13733	-15052	-16034	-17747	-15717

Source: DGCI&S and Ministry of Commerce & Industry.

No. 32: Foreign Exchange Reserves

Item	Unit	2021	2022					
		Nov. 26	Oct. 21	Oct. 28	Nov. 4	Nov. 11	Nov. 18	Nov. 25
		1	2	3	4	5	6	7
1 Total Reserves	₹ Crore	4776057	4337087	4379715	4370135	4401783	4470990	4494373
	US \$ Million	637687	524520	531081	529994	544715	547252	550142
1.1 Foreign Currency Assets	₹ Crore	4304119	3845481	3883007	3881411	3899324	3956579	3980973
	US \$ Million	574664	465075	470847	470727	482527	484288	487289
1.2 Gold	₹ Crore	290793	307638	311419	305555	320786	326887	326282
	US \$ Million	38825	37206	37762	37057	39696	40011	39938
	Volume (Metric Tonnes)	750.37	786.28	786.28	786.28	786.28	786.28	786.28
1.3 SDRs	SDRs Million	13657	13658	13658	13658	13662	13662	13662
	₹ Crore	142576	144204	145348	143391	141866	146291	146083
	US \$ Million	19036	17440	17625	17390	17555	17906	17881
1.4 Reserve Tranche Position in IMF	₹ Crore	38569	39763	39940	39778	39807	41233	41034
	US \$ Million	5162	4799	4847	4820	4936	5047	5033

* Difference, if any, is due to rounding off.

No. 33: Non-Resident Deposits

(US\$ Million)

Scheme	Outstanding				Flows	
	2021-22	2021	2022		2021-22	2022-23
		Oct.	Sep.	Oct.	Apr.-Oct.	Apr.-Oct.
	1	2	3	4	5	6
1 NRI Deposits	139022	141306	133674	134546	3282	4937
1.1 FCNR(B)	16918	18805	16008	16089	-1668	-829
1.2 NR(E)RA	100801	102481	95807	96659	3163	3577
1.3 NRO	21303	20020	21858	21798	1787	2189

No. 34: Foreign Investment Inflows

(US\$ Million)

Item	2021-22	2021-22	2022-23	2021	2022	
		Apr.-Oct.	Apr.-Oct.	Oct.	Sep.	Oct.
	1	2	3	4	5	6
1.1 Net Foreign Direct Investment (1.1.1–1.1.2)	38587	21267	22710	1016	941	2795
1.1.1 Direct Investment to India (1.1.1.1–1.1.2)	56231	32796	28838	2659	1686	3746
1.1.1.1 Gross Inflows/Gross Investments	84835	48579	44231	6057	5026	5131
1.1.1.1.1 Equity	59684	35378	30429	3799	3047	3093
1.1.1.1.1.1 Government (SIA/FIPB)	1698	1437	559	1105	90	3
1.1.1.1.1.2 RBI	42932	23708	23572	2076	2544	2493
1.1.1.1.1.3 Acquisition of shares	14143	9728	5793	539	339	517
1.1.1.1.1.4 Equity capital of unincorporated bodies	910	505	505	80	73	80
1.1.1.1.2 Reinvested earnings	19347	10737	10943	1691	1556	1691
1.1.1.1.3 Other capital	5805	2464	2859	567	423	348
1.1.1.2 Repatriation/Disinvestment	28605	15782	15393	3397	3339	1385
1.1.1.2.1 Equity	27189	15389	14160	3312	2919	1258
1.1.1.2.2 Other capital	1416	394	1232	86	420	127
1.1.2 Foreign Direct Investment by India (1.1.2.1+1.1.2.2+1.1.2.3–1.1.2.4)	17644	11529	6128	1643	746	951
1.1.2.1 Equity capital	10061	6086	3613	730	602	733
1.1.2.2 Reinvested Earnings	3379	1971	2002	282	282	282
1.1.2.3 Other Capital	7604	5373	2432	824	349	102
1.1.2.4 Repatriation/Disinvestment	3400	1901	1920	192	488	165
1.2 Net Portfolio Investment (1.2.1+1.2.2+1.2.3–1.2.4)	-16777	2326	-7842	-1953	-1564	545
1.2.1 GDRs/ADRs	–	–	–	–	–	–
1.2.2 FIIs	-14071	3348	-7440	-1574	-1378	607
1.2.3 Offshore funds and others	–	–	–	–	–	–
1.2.4 Portfolio investment by India	2706	1022	402	379	186	62
1 Foreign Investment Inflows	21809	23593	14868	-938	-623	3340

No. 35: Outward Remittances under the Liberalised Remittance Scheme (LRS) for Resident Individuals

(US\$ Million)

Item	2021-22	2021	2022		
		Oct.	Aug.	Sep.	Oct.
	1	2	3	4	5
1 Outward Remittances under the LRS	19610.77	1564.90	2667.81	2671.40	1924.09
1.1 Deposit	830.05	46.58	72.02	79.30	64.28
1.2 Purchase of immovable property	112.90	7.43	12.24	14.64	15.28
1.3 Investment in equity/debt	746.57	55.20	53.53	76.54	111.41
1.4 Gift	2336.29	172.06	221.31	243.73	208.11
1.5 Donations	16.55	0.83	1.57	0.98	1.68
1.6 Travel	6909.04	464.59	1469.73	1402.67	973.50
1.7 Maintenance of close relatives	3302.37	221.56	330.70	366.47	280.67
1.8 Medical Treatment	37.79	3.11	4.95	4.67	4.02
1.9 Studies Abroad	5165.33	579.84	467.52	424.95	217.87
1.10 Others	153.88	13.71	34.25	57.46	47.27

**No. 36: Indices of Nominal Effective Exchange Rate (NEER) and
Real Effective Exchange Rate (REER) of the Indian Rupee**

Item	2020-21	2021-22	2021	2022	
			November	October	November
	1	2	3	4	5
40-Currency Basket (Base: 2015-16=100)					
1 Trade-weighted					
1.1 NEER	93.92	93.13	93.50	91.90	91.68
1.2 REER	103.46	104.66	106.45	103.66	103.07
2 Export-weighted					
2.1 NEER	93.59	93.55	94.03	92.84	92.69
2.2 REER	102.96	103.48	105.32	101.66	101.08
6-Currency Basket (Trade-weighted)					
1 Base: 2015-16 = 100					
1.1 NEER	88.45	87.03	87.60	86.92	86.33
1.2 REER	101.84	102.27	104.21	103.58	102.78
2 Base: 2020-21 = 100					
2.1 NEER	100.00	98.39	99.04	98.27	97.60
2.2 REER	100.00	100.42	102.33	101.71	100.93

No. 37: External Commercial Borrowings (ECBs) – Registrations

(Amount in US\$ Million)

Item	2021-22	2021	2022	
		Oct	Sep	Oct
	1	2	3	4
1 Automatic Route				
1.1 Number	1086	76	100	77
1.2 Amount	28851	1339	2609	931
2 Approval Route				
2.1 Number	18	0	1	3
2.2 Amount	11035	0	100	499
3 Total (1+2)				
3.1 Number	1104	76	101	80
3.2 Amount	39886	1339	2709	1430
4 Weighted Average Maturity (in years)	8.00	5.04	5.30	5.30
5 Interest Rate (per cent)				
5.1 Weighted Average Margin over 6-month LIBOR or reference rate for Floating Rate Loans	1.71	1.14	1.80	1.24
5.2 Interest rate range for Fixed Rate Loans	0.00-10.50	0.00-11.00	0.00-11.40	0.00-9.00
Borrower Category				
I. Corporate Manufacturing	12244	231	616	198
II. Corporate-Infrastructure	17023	1065	1129	464
a.) Transport	1597	0	0	0
b.) Energy	8215	166	152	14
c.) Water and Sanitation	10	0	7	0
d.) Communication	1,258	0	0	0
e.) Social and Commercial Infrastructure	0	0	330	100
f.) Exploration, Mining and Refinery	4691	850	350	350
g.) Other Sub-Sectors	1252	48	290	0
III. Corporate Service-Sector	1570	16	91	213
IV. Other Entities	609	0	102	100
a.) units in SEZ	9	0	2	0
b.) SIDBI				0
c.) Exim Bank	600	0	100	100
V. Banks	100	0	0	0
VI. Financial Institution (Other than NBFC)	4	0	0	0
VII. NBFCs	7995	5	770	450
a). NBFC- IFC/AFC	5621	0	150	399
b). NBFC-MFI	93	0	105	0
c). NBFC-Others	2282	5	515	51
VIII. Non-Government Organization (NGO)	0	0	0	0
IX. Micro Finance Institution (MFI)	0	0	0	0
X. Others	341	22	1	5

No. 38: India's Overall Balance of Payments

(US\$ Million)

Item	Apr-Jun 2021			Apr-Jun 2022(P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
Overall Balance of Payments(1+2+3)	344159	312289	31870	429226	424631	4595
1 CURRENT ACCOUNT (1.1+ 1.2)	180111	173552	6559	230988	254881	-23893
1.1 MERCHANDISE	97448	128163	-30715	122968	191524	-68556
1.2 INVISIBLES (1.2.1+1.2.2+1.2.3)	82663	45389	37275	108019	63357	44663
1.2.1 Services	56217	30408	25808	76100	45024	31076
1.2.1.1 Travel	1597	2885	-1289	4705	6299	-1593
1.2.1.2 Transportation	6733	6616	117	9855	11780	-1924
1.2.1.3 Insurance	772	428	344	916	510	406
1.2.1.4 G.n.i.e.	203	236	-32	170	207	-37
1.2.1.5 Miscellaneous	46912	20243	26669	60454	26230	34225
1.2.1.5.1 Software Services	27602	2466	25136	34476	3784	30692
1.2.1.5.2 Business Services	12962	11635	1327	17751	14303	3448
1.2.1.5.3 Financial Services	1201	1118	83	1660	1514	146
1.2.1.5.4 Communication Services	807	310	497	961	439	522
1.2.2 Transfers	20917	1904	19013	25651	2800	22851
1.2.2.1 Official	23	232	-209	31	245	-214
1.2.2.2 Private	20894	1672	19222	25620	2555	23065
1.2.3 Income	5530	13077	-7547	6268	15532	-9264
1.2.3.1 Investment Income	3929	12366	-8437	4577	14749	-10172
1.2.3.2 Compensation of Employees	1601	711	890	1691	783	908
2 CAPITAL ACCOUNT (2.1+2.2+2.3+2.4+2.5)	164048	138656	25392	197716	169750	27966
2.1 Foreign Investment (2.1.1+2.1.2)	102726	90770	11956	106275	107310	-1035
2.1.1 Foreign Direct Investment	23689	12135	11554	23044	9449	13595
2.1.1.1 In India	23147	5910	17237	22492	6211	16281
2.1.1.1.1 Equity	17773	5818	11955	16795	5797	10999
2.1.1.1.2 Reinvested Earnings	4378		4378	4584		4584
2.1.1.1.3 Other Capital	997	92	905	1114	415	699
2.1.1.2 Abroad	542	6225	-5683	552	3238	-2686
2.1.1.2.1 Equity	542	2532	-1989	552	1193	-641
2.1.1.2.2 Reinvested Earnings	0	845	-845	0	876	-876
2.1.1.2.3 Other Capital	0	2849	-2849	0	1169	-1169
2.1.2 Portfolio Investment	79036	78634	402	83231	97861	-14630
2.1.2.1 In India	77499	77121	378	82548	97207	-14659
2.1.2.1.1 FIIs	77499	77121	378	82548	97207	-14659
2.1.2.1.1.1 Equity	69769	68832	937	72768	87798	-15029
2.1.2.1.1.2 Debt	7730	8289	-559	9780	9410	370
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0
2.1.2.2 Abroad	1537	1513	24	683	654	29
2.2 Loans (2.2.1+2.2.2+2.2.3)	16564	13727	2837	26628	18929	7698
2.2.1 External Assistance	1891	1605	286	3232	1423	1809
2.2.1.1 By India	13	16	-3	11	23	-12
2.2.1.2 To India	1879	1589	290	3221	1400	1820
2.2.2 Commercial Borrowings	3370	2756	614	3130	6005	-2875
2.2.2.1 By India	736	293	443	216	138	78
2.2.2.2 To India	2634	2463	171	2914	5867	-2953
2.2.3 Short Term to India	11303	9366	1937	20266	11502	8764
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	9259	9366	-107	17484	11502	5982
2.2.3.2 Suppliers' Credit up to 180 days	2044	0	2044	2782	0	2782
2.3 Banking Capital (2.3.1+2.3.2)	28916	24851	4065	49574	30533	19041
2.3.1 Commercial Banks	28916	24827	4089	49574	30018	19556
2.3.1.1 Assets	16216	14610	1606	35834	16375	19458
2.3.1.2 Liabilities	12700	10217	2483	13741	13643	97
2.3.1.2.1 Non-Resident Deposits	11212	8686	2525	12287	11937	349
2.3.2 Others	0	25	-25	0	514	-514
2.4 Rupee Debt Service	0	57	-57	0	59	-59
2.5 Other Capital	15842	9251	6591	15239	12919	2320
3 Errors & Omissions	0	81	-81	522	0	522
4 Monetary Movements (4.1+ 4.2)	0	31870	-31870	0	4595	-4595
4.1 I.M.F.	0	0	0	0	0	0
4.2 Foreign Exchange Reserves (Increase - / Decrease +)		31870	-31870	0	4595	-4595

Note : P : Preliminary

No. 39: India's Overall Balance of Payments

(₹ Crore)

Item	Apr-Jun 2021			Apr-Jun 2022(P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
Overall Balance of Payments(1+2+3)	2538726	2303632	235094	3313079	3277608	35471
1 CURRENT ACCOUNT (1.1+ 1.2)	1328609	1280223	48386	1782929	1967352	-184423
1.1 MERCHANDISE	718833	945407	-226574	949158	1478320	-529162
1.2 INVISIBLES (1.2.1+1.2.2+1.2.3)	609775	334816	274960	833771	489032	344739
1.2.1 Services	414688	224311	190377	587397	347531	239866
1.2.1.1 Travel	11778	21283	-9505	36320	48618	-12298
1.2.1.2 Transportation	49664	48803	861	76068	90923	-14855
1.2.1.3 Insurance	5696	3160	2536	7067	3936	3131
1.2.1.4 G.n.i.e.	1500	1739	-239	1314	1596	-282
1.2.1.5 Miscellaneous	346050	149325	196724	466628	202458	264170
1.2.1.5.1 Software Services	203612	18192	185420	266112	29209	236902
1.2.1.5.2 Business Services	95612	85825	9787	137013	110398	26614
1.2.1.5.3 Financial Services	8856	8247	609	12811	11683	1129
1.2.1.5.4 Communication Services	5951	2286	3664	7419	3390	4029
1.2.2 Transfers	154296	14044	140252	197995	21616	176379
1.2.2.1 Official	171	1712	-1541	241	1894	-1653
1.2.2.2 Private	154125	12332	141793	197753	19722	178032
1.2.3 Income	40791	96460	-55669	48379	119885	-71506
1.2.3.1 Investment Income	28979	91217	-62238	35330	113844	-78514
1.2.3.2 Compensation of Employees	11812	5244	6568	13049	6041	7008
2 CAPITAL ACCOUNT (2.1+2.2+2.3+2.4+2.5)	1210117	1022811	187306	1526118	1310256	215862
2.1 Foreign Investment (2.1.1+2.1.2)	757768	669572	88196	820308	828297	-7989
2.1.1 Foreign Direct Investment	174747	89517	85230	177871	72934	104937
2.1.1.1 In India	170748	43594	127154	173612	47943	125670
2.1.1.1.1 Equity	131103	42917	88185	129638	44743	84895
2.1.1.1.2 Reinvested Earnings	32292	0	32292	35379	0	35379
2.1.1.1.3 Other Capital	7354	677	6676	8596	3200	5396
2.1.1.2 Abroad	3999	45923	-41924	4259	24992	-20733
2.1.1.2.1 Equity	3999	18675	-14676	4259	9206	-4947
2.1.1.2.2 Reinvested Earnings	0	6231	-6231	0	6763	-6763
2.1.1.2.3 Other Capital	0	21017	-21017	0	9023	-9023
2.1.2 Portfolio Investment	583021	580055	2966	642437	755362	-112926
2.1.2.1 In India	571680	568891	2789	637168	750316	-113148
2.1.2.1.1 FIIs	571680	568891	2789	637168	750316	-113148
2.1.2.1.1.1 Equity	514658	507747	6911	561680	677686	-116006
2.1.2.1.1.2 Debt	57022	61143	-4121	75489	72631	2858
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0
2.1.2.2 Abroad	11341	11164	177	5268	5046	222
2.2 Loans (2.2.1+2.2.2+2.2.3)	122188	101261	20927	205533	146111	59422
2.2.1 External Assistance	13953	11840	2112	24946	10985	13962
2.2.1.1 By India	95	120	-26	87	177	-89
2.2.1.2 To India	13858	11720	2138	24859	10808	14051
2.2.2 Commercial Borrowings	24860	20333	4528	24160	46348	-22188
2.2.2.1 By India	5430	2164	3265	1664	1062	603
2.2.2.2 To India	19431	18169	1262	22495	45286	-22790
2.2.3 Short Term to India	83375	69088	14287	156427	88778	67648
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	68300	69088	-788	134952	88778	46173
2.2.3.2 Suppliers' Credit up to 180 days	15076	0	15076	21475	0	21475
2.3 Banking Capital (2.3.1+2.3.2)	213303	183319	29984	382650	235676	146974
2.3.1 Commercial Banks	213303	183137	30166	382650	231704	150945
2.3.1.1 Assets	119616	107769	11847	276591	126397	150194
2.3.1.2 Liabilities	93687	75367	18319	106059	105308	752
2.3.1.2.1 Non-Resident Deposits	82703	64074	18629	94837	92139	2697
2.3.2 Others	0	182	-182	0	3971	-3971
2.4 Rupee Debt Service	0	419	-419	0	456	-456
2.5 Other Capital	116858	68240	48618	117627	99718	17910
3 Errors & Omissions	0	598	-598	4032	0	4032
4 Monetary Movements (4.1+ 4.2)	0	235094	-235094	0	35471	-35471
4.1 I.M.F.	0	0	0	0	0	0
4.2 Foreign Exchange Reserves (Increase - / Decrease +)	0	235094	-235094	0	35471	-35471

Note : P: Preliminary

No. 40: Standard Presentation of BoP in India as per BPM6

(US\$ Million)

Item	Apr-Jun 2021			Apr-Jun 2022(P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
1 Current Account (1.A+1.B+1.C)	180110	173529	6581	230985	254856	-23872
1.A Goods and Services (1.A.a+1.A.b)	153664	158571	-4907	199069	236548	-37480
1.A.a Goods (1.A.a.1 to 1.A.a.3)	97448	128163	-30715	122968	191524	-68556
1.A.a.1 General merchandise on a BOP basis	97369	120278	-22909	122522	181035	-58513
1.A.a.2 Net exports of goods under merchanting	79	0	79	446	0	446
1.A.a.3 Nonmonetary gold		7885	-7885		10489	-10489
1.A.b Services (1.A.b.1 to 1.A.b.13)	56217	30408	25808	76100	45024	31076
1.A.b.1 Manufacturing services on physical inputs owned by others	83	9	73	321	28	293
1.A.b.2 Maintenance and repair services n.i.e.	58	127	-70	48	432	-384
1.A.b.3 Transport	6733	6616	117	9855	11780	-1924
1.A.b.4 Travel	1597	2885	-1289	4705	6299	-1593
1.A.b.5 Construction	583	892	-309	739	730	9
1.A.b.6 Insurance and pension services	772	428	344	916	510	406
1.A.b.7 Financial services	1201	1118	83	1660	1514	146
1.A.b.8 Charges for the use of intellectual property n.i.e.	191	1972	-1781	332	2251	-1919
1.A.b.9 Telecommunications, computer, and information services	28489	3017	25473	35521	4436	31085
1.A.b.10 Other business services	12962	11635	1327	17751	14303	3448
1.A.b.11 Personal, cultural, and recreational services	647	804	-157	946	1252	-306
1.A.b.12 Government goods and services n.i.e.	203	236	-32	170	207	-37
1.A.b.13 Others n.i.e.	2698	669	2029	3137	1284	1853
1.B Primary Income (1.B.1 to 1.B.3)	5530	13077	-7547	6268	15532	-9264
1.B.1 Compensation of employees	1601	711	890	1691	783	908
1.B.2 Investment income	2962	12106	-9143	3404	14387	-10983
1.B.2.1 Direct investment	1511	7318	-5807	2047	9391	-7384
1.B.2.2 Portfolio investment	143	1852	-1709	62	1604	-1542
1.B.2.3 Other investment	45	2935	-2890	102	3378	-3276
1.B.2.4 Reserve assets	1264	1	1263	1193	15	1178
1.B.3 Other primary income	966	260	706	1173	362	811
1.C Secondary Income (1.C.1+1.C.2)	20916	1882	19034	25648	2776	22872
1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs	20894	1672	19222	25620	2555	23065
1.C.1.1 Personal transfers (Current transfers between resident and/ non-resident households)	20074	1183	18891	24969	1806	23163
1.C.1.2 Other current transfers	820	489	331	651	749	-98
1.C.2 General government	22	210	-187	28	221	-193
2 Capital Account (2.1+2.2)	116	170	-54	141	230	-88
2.1 Gross acquisitions (DR.)/disposals (CR.) of non-produced nonfinancial assets	7	56	-49	19	132	-113
2.2 Capital transfers	109	114	-5	123	98	25
3 Financial Account (3.1 to 3.5)	163933	170379	-6446	197578	174140	23438
3.1 Direct Investment (3.1A+3.1B)	23689	12135	11554	23044	9449	13595
3.1.A Direct Investment in India	23147	5910	17237	22492	6211	16281
3.1.A.1 Equity and investment fund shares	22150	5818	16332	21379	5797	15582
3.1.A.1.1 Equity other than reinvestment of earnings	17773	5818	11955	16795	5797	10999
3.1.A.1.2 Reinvestment of earnings	4378		4378	4584		4584
3.1.A.2 Debt instruments	997	92	905	1114	415	699
3.1.A.2.1 Direct investor in direct investment enterprises	997	92	905	1114	415	699
3.1.B Direct Investment by India	542	6225	-5683	552	3238	-2686
3.1.B.1 Equity and investment fund shares	542	3376	-2834	552	2069	-1517
3.1.B.1.1 Equity other than reinvestment of earnings	542	2532	-1989	552	1193	-641
3.1.B.1.2 Reinvestment of earnings		845	-845		876	-876
3.1.B.2 Debt instruments	0	2849	-2849	0	1169	-1169
3.1.B.2.1 Direct investor in direct investment enterprises		2849	-2849		1169	-1169
3.2 Portfolio Investment	79036	78634	402	83231	97861	-14630
3.2.A Portfolio Investment in India	77499	77121	378	82548	97207	-14659
3.2.1 Equity and investment fund shares	69769	68832	937	72768	87798	-15029
3.2.2 Debt securities	7730	8289	-559	9780	9410	370
3.2.B Portfolio Investment by India	1537	1513	24	683	654	29
3.3 Financial derivatives (other than reserves) and employee stock options	3544	4841	-1297	5267	7658	-2391
3.4 Other investment	57663	42898	14765	86036	54577	31459
3.4.1 Other equity (ADRs/GDRs)	0	0	0	0	0	0
3.4.2 Currency and deposits	11212	8711	2501	12287	12452	-165
3.4.2.1 Central bank (Rupee Debt Movements; NRG)	0	25	-25	0	514	-514
3.4.2.2 Deposit-taking corporations, except the central bank (NRI Deposits)	11212	8686	2525	12287	11937	349
3.4.2.3 General government			0			0
3.4.2.4 Other sectors			0			0
3.4.3 Loans (External Assistance, ECBs and Banking Capital)	22966	20502	2464	43650	25509	18141
3.4.3.A Loans to India	22217	20192	2025	43423	25349	18074
3.4.3.B Loans by India	749	310	439	227	160	66
3.4.4 Insurance, pension, and standardized guarantee schemes	32	63	-30	74	184	-110
3.4.5 Trade credit and advances	11303	9366	1937	20266	11502	8764
3.4.6 Other accounts receivable/payable - other	12150	4257	7894	9760	4931	4829
3.4.7 Special drawing rights			0			0
3.5 Reserve assets	0	31870	-31870	0	4595	-4595
3.5.1 Monetary gold			0			0
3.5.2 Special drawing rights n.a.			0			0
3.5.3 Reserve position in the IMF n.a.			0			0
3.5.4 Other reserve assets (Foreign Currency Assets)	0	31870	-31870	0	4595	-4595
4 Total assets/liabilities	163933	170379	-6446	197578	174140	23438
4.1 Equity and investment fund shares	97575	84443	13132	100722	104158	-3436
4.2 Debt instruments	54207	49808	4399	87096	60456	26640
4.3 Other financial assets and liabilities	12150	36127	-23977	9760	9526	233
5 Net errors and omissions		81	-81	522		522

Note : P : Preliminary

No. 41: Standard Presentation of BoP in India as per BPM6

(₹ Crore)

Item	Apr-Jun 2021			Apr-Jun 2022(P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
1 Current Account (1.A+1.B+1.C)	1328602	1280058	48544	1782907	1967166	-184259
1.A Goods and Services (1.A.a+1.A.b)	1133522	1169718	-36197	1536555	1825851	-289296
1.A.a Goods (1.A.a.1 to 1.A.a.3)	718833	945407	-226574	949158	1478320	-529162
1.A.a.1 General merchandise on a BOP basis	718253	887242	-168989	945715	1397359	-451644
1.A.a.2 Net exports of goods under merchandising	580	0	580	3443	0	3443
1.A.a.3 Nonmonetary gold	0	58165	-58165	0	80961	-80961
1.A.b Services (1.A.b.1 to 1.A.b.13)	414688	224311	190377	587397	347531	239866
1.A.b.1 Manufacturing services on physical inputs owned by others	610	68	542	2474	213	2261
1.A.b.2 Maintenance and repair services n.i.e.	424	938	-514	367	3334	-2967
1.A.b.3 Transport	49664	48803	861	76068	90923	-14855
1.A.b.4 Travel	11778	21283	-9505	36320	48618	-12298
1.A.b.5 Construction	4303	6581	-2278	5705	5637	68
1.A.b.6 Insurance and pension services	5696	3160	2536	7067	3936	3131
1.A.b.7 Financial services	8856	8247	609	12811	11683	1129
1.A.b.8 Charges for the use of intellectual property n.i.e.	1412	14547	-13135	2560	17373	-14813
1.A.b.9 Telecommunications, computer, and information services	210155	22252	187903	274180	34244	239936
1.A.b.10 Other business services	95612	85825	9787	137013	110398	26614
1.A.b.11 Personal, cultural, and recreational services	4776	5933	-1157	7303	9666	-2363
1.A.b.12 Government goods and services n.i.e.	1500	1739	-239	1314	1596	-282
1.A.b.13 Others n.i.e.	19901	4934	14967	24215	9910	14305
1.B Primary Income (1.B.1 to 1.B.3)	40791	96460	-55669	48379	119885	-71506
1.B.1 Compensation of employees	11812	5244	6568	13049	6041	7008
1.B.2 Investment income	21852	89299	-67446	26277	111052	-84775
1.B.2.1 Direct investment	11143	53979	-42836	15804	72484	-56680
1.B.2.2 Portfolio investment	1051	13662	-12610	476	12377	-11902
1.B.2.3 Other investment	336	21651	-21316	789	26078	-25289
1.B.2.4 Reserve assets	9322	7	9315	9209	113	9096
1.B.3 Other primary income	7127	1918	5209	9053	2792	6261
1.C Secondary Income (1.C.1+1.C.2)	154289	13879	140410	197973	21430	176543
1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs	154125	12332	141793	197753	19722	178032
1.C.1.1 Personal transfers (Current transfers between resident and non-resident households)	148076	8724	139352	192727	13938	178789
1.C.1.2 Other current transfers	6049	3608	2441	5026	5784	-757
1.C.2 General government	164	1547	-1383	219	1709	-1489
2 Capital Account (2.1+2.2)	854	1253	-399	1092	1773	-681
2.1 Gross acquisitions (DR.) / disposals (CR.) of non-produced nonfinancial assets	51	413	-363	145	1016	-871
2.2 Capital transfers	803	839	-37	947	756	190
3 Financial Account (3.1 to 3.5)	1209270	1256817	-47547	1525048	1344140	180908
3.1 Direct Investment (3.1.A+3.1.B)	174747	89517	85230	177871	72934	104937
3.1.A Direct Investment in India	170748	43594	127154	173612	47943	125670
3.1.A.1 Equity and investment fund shares	163395	42917	120477	165017	44743	120274
3.1.A.1.1 Equity other than reinvestment of earnings	131103	42917	88185	129638	44743	84895
3.1.A.1.2 Reinvestment of earnings	32292	0	32292	35379	0	35379
3.1.A.2 Debt instruments	7354	677	6676	8596	3200	5396
3.1.A.2.1 Direct investor in direct investment enterprises	7354	677	6676	8596	3200	5396
3.1.B Direct Investment by India	3999	45923	-41924	4259	24992	-20733
3.1.B.1 Equity and investment fund shares	3999	24906	-20907	4259	15969	-11710
3.1.B.1.1 Equity other than reinvestment of earnings	3999	18675	-14676	4259	9206	-4947
3.1.B.1.2 Reinvestment of earnings	0	6231	-6231	0	6763	-6763
3.1.B.2 Debt instruments	0	21017	-21017	0	9023	-9023
3.1.B.2.1 Direct investor in direct investment enterprises	0	21017	-21017	0	9023	-9023
3.2 Portfolio Investment	583021	580055	2966	642437	755362	-112926
3.2.A Portfolio Investment in India	571680	568891	2789	637168	750316	-113148
3.2.1 Equity and investment fund shares	514658	507747	6911	561680	677686	-116006
3.2.2 Debt securities	57022	61143	-4121	75489	72631	2858
3.2.B Portfolio Investment by India	11341	11164	177	5268	5046	222
3.3 Financial derivatives (other than reserves) and employee stock options	26144	35709	-9565	40653	59109	-18455
3.4 Other investment	425358	316442	108916	664087	421264	242823
3.4.1 Other equity (ADRs/GDRs)	0	0	0	0	0	0
3.4.2 Currency and deposits	82703	64257	18447	94837	96111	-1274
3.4.2.1 Central bank (Rupee Debt Movements; NRG)	0	182	-182	0	3971	-3971
3.4.2.2 Deposit-taking corporations, except the central bank (NRI Deposits)	82703	64074	18629	94837	92139	2697
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)	169413	151235	18177	336919	196897	140022
3.4.3.A Loans to India	163889	148951	14938	335168	195659	139509
3.4.3.B Loans by India	5524	2284	3240	1751	1238	513
3.4.4 Insurance, pension, and standardized guarantee schemes	238	462	-224	571	1417	-846
3.4.5 Trade credit and advances	83375	69088	14287	156427	88778	67648
3.4.6 Other accounts receivable/payable - other	89629	31400	58229	75333	38060	37273
3.4.7 Special drawing rights	0	0	0	0	0	0
3.5 Reserve assets	0	235094	-235094	0	35471	-35471
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	235094	-235094	0	35471	-35471
4 Total assets/liabilities	1209270	1256817	-47547	1525048	1344140	180908
4.1 Equity and investment fund shares	719775	622906	96869	777448	803969	-26521
4.2 Debt instruments	399867	367417	32450	672267	466640	205627
4.3 Other financial assets and liabilities	89629	266494	-176865	75333	73531	1802
5 Net errors and omissions	0	598	-598	4032	0	4032

Note : P: Preliminary

No. 42: International Investment Position

(US\$ Million)

Item	As on Financial Year /Quarter End							
	2021-22		2021		2022			
			Jun.		Mar.		Jun.	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	1	2	3	4	5	6	7	8
1.1 Equity and investment fund shares	132765	493987	125560	467984	132765	493987	134283	489605
1.2 Debt instruments	78807	27673	74052	25696	78807	27673	79976	27719
1 Direct investment	211573	521661	199612	493680	211573	521661	214259	517324
2.1 Equity and investment fund shares	1110	156381	3146	176203	1110	156381	8153	135476
2.2 Debt securities	9533	114124	4766	108708	9533	114124	2461	110966
2 Portfolio investment	10642	270505	7912	284911	10642	270505	10614	246442
3.1 Trade credit and advances	18561	118157	7875	102106	18561	118157	21270	126894
3.2 Loans	10474	195761	13607	189980	10474	195761	6543	192103
3.3 Currency and deposits	42081	140994	35904	143096	42081	140994	30242	137445
3.4 Other accounts receivable	19858	32203	19427	12344	19858	32203	19504	30929
3 Other investment	90974	487115	76813	447526	90974	487115	77559	487371
4 Reserve assets	607309		611075		607309		589155	
5 Total Assets / Liabilities	920498	1279281	895412	1226117	920498	1279281	891585	1251136
6 Net International Investment Position	-358783		-330705		-358783		-359551	

Payment and Settlement Systems

No.43: Payment System Indicators

PART I - Payment System Indicators - Payment & Settlement System Statistics

System	Volume (Lakh)				Value (₹ Crore)			
	FY 2021-22	2021	2022		FY 2021-22	2021	2022	
		Oct.	Sep.	Oct.		Oct.	Sep.	Oct.
	1	2	3	4	5	6	7	8
A. Settlement Systems								
Financial Market Infrastructures (FMIs)								
1 CCIL Operated Systems (1.1 to 1.3)	33.01	2.85	3.97	3.06	206873112	16600978	24321858	20887702
1.1 Govt. Securities Clearing (1.1.1 to 1.1.3)	12.22	1.04	1.51	1.07	142072939	11415739	16060463	13863316
1.1.1 Outright	6.22	0.55	0.86	0.54	8793301	745937	1027326	672816
1.1.2 Repo	3.08	0.25	0.36	0.31	51015712	3822009	6014630	5277168
1.1.3 Tri-party Repo	2.92	0.23	0.30	0.22	82263926	6847793	9018508	7913333
1.2 Forex Clearing	19.91	1.73	2.34	1.90	59775826	4736040	7499481	6514292
1.3 Rupee Derivatives @	0.88	0.08	0.11	0.08	5024347	449200	761914	510094
B. Payment Systems								
I Financial Market Infrastructures (FMIs)	—	—	—	—	—	—	—	—
1 Credit Transfers - RTGS (1.1 to 1.2)	2078.39	184.11	198.30	190.34	128657516	10134368	13789637	11551277
1.1 Customer Transactions	2063.73	182.90	197.10	189.18	113319292	8956918	12094321	10015711
1.2 Interbank Transactions	14.66	1.22	1.20	1.15	15338225	1177450	1695316	1535565
II Retail								
2 Credit Transfers - Retail (2.1 to 2.6)	577934.74	52919.52	79564.55	85748.55	42728006	3748602	4621357	4557107
2.1 AePS (Fund Transfers) @	9.76	0.86	0.55	0.56	575	49	32	31
2.2 APBS \$	12573.33	1192.91	1170.39	1843.72	133345	7519	12805	25462
2.3 IMPS	46625.25	4306.71	4622.31	4824.59	4171037	370712	454451	466082
2.4 NACH Cr \$	18757.82	1660.26	1630.85	1454.99	1281685	122519	114718	127118
2.5 NEFT	40407.29	3574.46	4332.45	4570.48	28725463	2476397	2922913	2726827
2.6 UPI @	459561.30	42184.32	67808.00	73054.21	8415900	771407	1116438	1211588
2.6.1 of which USSD @	11.99	1.11	1.47	1.26	177	16	17	15
3 Debit Transfers and Direct Debits (3.1 to 3.3)	12189.49	979.36	1256.45	1297.79	1034444	85776	105856	106956
3.1 BHIM Aadhaar Pay @	227.73	21.49	16.35	19.99	6113	560	516	604
3.2 NACH Dr \$	10754.74	865.69	1113.20	1139.92	1026641	85103	105128	106131
3.3 NETC (linked to bank account) @	1207.02	92.18	126.90	137.88	1689	114	211	221
4 Card Payments (4.1 to 4.2)	61782.93	6008.76	5363.24	5533.85	1701851	177413	183981	196617
4.1 Credit Cards (4.1.1 to 4.1.2)	22398.82	2155.81	2460.17	2561.33	971638	100943	122554	129334
4.1.1 PoS based \$	11124.59	1075.23	1317.07	1451.02	380643	38442	45287	54148
4.1.2 Others \$	11274.23	1080.58	1143.10	1110.31	590994	62500	77267	75186
4.2 Debit Cards (4.2.1 to 4.2.1)	39384.11	3852.95	2903.07	2972.52	730213	76471	61427	67283
4.2.1 PoS based \$	22967.10	2302.56	1888.46	2050.43	451550	47226	38135	46396
4.2.2 Others \$	16417.00	1550.39	1014.61	922.09	278663	29245	23292	20887
5 Prepaid Payment Instruments (5.1 to 5.2)	65782.75	6130.90	6048.61	6167.35	279416	25757	24090	24296
5.1 Wallets	53013.86	4888.97	4706.99	4877.04	220183	21702	17915	18450
5.2 Cards (5.2.1 to 5.2.2)	12768.89	1241.93	1341.62	1290.31	59233	4055	6175	5846
5.2.1 PoS based \$	1116.16	64.58	79.41	83.89	19546	998	1172	1169
5.2.2 Others \$	11652.73	1177.35	1262.21	1206.42	39687	3057	5004	4677
6 Paper-based Instruments (6.1 to 6.2)	6999.12	635.20	603.84	561.89	6650333	582604	591106	550935
6.1 CTS (NPCI Managed)	6999.12	635.20	603.84	561.89	6650333	582604	591106	550935
6.2 Others	0.00	—	—	—	—	—	—	—
Total - Retail Payments (2+3+4+5+6)	724689.03	66673.75	92836.69	99309.42	52394049	4620153	5526390	5435911
Total Payments (1+2+3+4+5+6)	726767.42	66857.86	93034.99	99499.76	181051565	14754521	19316027	16987188
Total Digital Payments (1+2+3+4+5)	719768.30	66222.66	92431.15	98937.87	174401233	14171917	18724921	16436254

PART II - Payment Modes and Channels

System	Volume (Lakh)				Value (₹ Crore)			
	FY 2021-22	2021	2022		FY 2021-22	2021	2022	
		Oct.	Sep.	Oct.		Oct.	Sep.	Oct.
	1	2	3	4	5	6	7	8
A. Other Payment Channels								
1 Mobile Payments (mobile app based) (1.1 to 1.2)	506842.31	45884.20	72862.29	78248.46	14961371	1353833	1882943	1981406
1.1 Intra-bank \$	40805.69	3761.40	5133.31	5473.11	2726363	243728	348416	351595
1.2 Inter-bank \$	466036.62	42122.80	67728.99	72775.35	12235007	1110105	1534526	1629812
2 Internet Payments (Netbanking / Internet Browser Based) @ (2.1 to 2.2)	40726.59	3689.87	3585.10	3628.03	83159996	6617482	8433346	7182384
2.1 Intra-bank @	9583.32	862.55	918.60	873.32	52142582	3970049	4985305	4126602
2.2 Inter-bank @	31143.27	2827.31	2666.49	2754.70	31017413	2647433	3448041	3055782
B. ATMs								
3 Cash Withdrawal at ATMs \$ (3.1 to 3.3)	65240.43	6032.74	5725.75	6119.16	3111946	289887	265244	291538
3.1 Using Credit Cards \$	62.37	5.64	7.24	7.67	3130	286	352	375
3.2 Using Debit Cards \$	64851.61	5998.03	5684.15	6073.01	3097739	288605	263765	289951
3.3 Using Pre-paid Cards \$	326.45	29.07	34.36	38.48	11076	997	1127	1212
4 Cash Withdrawal at PoS \$ (4.1 to 4.2)	91.17	5.34	2.71	2.15	728	64	34	22
4.1 Using Debit Cards \$	79.42	4.44	2.67	2.12	557	39	34	22
4.2 Using Pre-paid Cards \$	11.75	0.90	0.04	0.03	171	25	0	0
5 Cash Withdrawal at Micro ATMs @	11126.04	946.33	1004.99	1156.16	299776	24799	26097	30463
5.1 AePS @	11126.04	946.33	1004.99	1156.16	299776	24799	26097	30463

PART III - Payment Infrastructures (Lakh)

System	As on March 2022	2021	2022	
		Oct.	Sep.	Oct.
	1	2	3	4
Payment System Infrastructures				
1 Number of Cards (1.1 to 1.2)	9912.93	9991.95	10162.40	10188.29
1.1 Credit Cards	736.27	663.61	777.02	793.68
1.2 Debit Cards	9176.66	9328.34	9385.38	9394.61
2 Number of PPIs @ (2.1 to 2.2)	15553.69	14450.87	15842.95	15968.37
2.1 Wallets @	12787.93	12025.10	13106.33	13195.92
2.2 Cards @	2765.76	2425.77	2736.62	2772.44
3 Number of ATMs (3.1 to 3.2)	2.52	2.41	2.55	2.55
3.1 Bank owned ATMs \$	2.20	2.13	2.20	2.20
3.2 White Label ATMs \$	0.31	0.28	0.35	0.35
4 Number of Micro ATMs @	9.16	6.71	12.39	12.90
5 Number of PoS Terminals	60.70	51.55	70.35	72.11
6 Bharat QR @	49.72	44.35	48.64	47.19
7 UPI QR *	1727.34	1285.05	2164.30	2253.23

@: New inclusion w.e.f. November 2019

#: Data reported by Co-operative Banks, LABs and RRBs included with effect from December 2021.

\$: Inclusion separately initiated from November 2019 - would have been part of other items hitherto.

*: New inclusion w.e.f. September 2020; Includes only static UPI QR Code

Note : 1. Data is provisional.

2. ECS (Debit and Credit) has been merged with NACH with effect from January 31, 2020.

3. The data from November 2019 onwards for card payments (Debit/Credit cards) and Prepaid Payment Instruments (PPIs) may not be comparable with earlier months/ periods, as more granular data is being published along with revision in data definitions.

4. Only domestic financial transactions are considered. The new format captures e-commerce transactions; transactions using FASTags, digital bill payments and card-to-card transfer through ATMs, etc.. Also, failed transactions, chargebacks, reversals, expired cards/ wallets, are excluded.

Occasional Series

No. 44: Small Savings

(₹ Crore)

Scheme		2020-21	2021		2022	
			Feb.	Dec.	Jan.	Feb.
		1	2	3	4	5
1 Small Savings	Receipts	181237	14405	18175	14893	13932
	Outstanding	1259585	1224772	1397878	1412766	1426737
1.1 Total Deposits	Receipts	132687	10143	13855	10676	9753
	Outstanding	867494	847119	969847	980523	990274
1.1.1 Post Office Saving Bank Deposits	Receipts	39748	2252	4475	3018	3568
	Outstanding	205888	194738	226701	229719	233287
1.1.2 MGNREG	Receipts					
	Outstanding					
1.1.3 National Saving Scheme, 1987	Receipts	276	-23	-366	-15	-20
	Outstanding	3419	3037	3200	3185	3165
1.1.4 National Saving Scheme, 1992	Receipts	166	57	2	-1	-777
	Outstanding	175	40	150	149	-628
1.1.5 Monthly Income Scheme	Receipts	12211	1135	1228	1146	933
	Outstanding	221379	220277	232747	233892	234825
1.1.6 Senior Citizen Scheme 2004	Receipts	21009	1950	1929	1615	1490
	Outstanding	97051	94750	114134	115749	117239
1.1.7 Post Office Time Deposits	Receipts	41470	3798	3926	3438	3217
	Outstanding	207557	203597	241034	244474	247690
1.1.7.1 1 year Time Deposits	Outstanding	108205	107099	116043	116819	117578
1.1.7.2 2 year Time Deposits	Outstanding	7473	7418	7931	7967	7996
1.1.7.3 3 year Time Deposits	Outstanding	7227	7267	6983	6964	6944
1.1.7.4 5 year Time Deposits	Outstanding	84652	81813	110077	112724	115172
1.1.8 Post Office Recurring Deposits	Receipts	17807	974	2662	1475	1338
	Outstanding	132029	130683	151885	153359	154697
1.1.9 Post Office Cumulative Time Deposits	Receipts	0	0	-1	0	4
	Outstanding	-25	-24	-25	-25	-22
1.1.10 Other Deposits	Receipts	0	0	0	0	0
	Outstanding	21	21	21	21	21
1.2 Saving Certificates	Receipts	34860	3647	3978	3691	3583
	Outstanding	286863	282483	321027	324713	328337
1.2.1 National Savings Certificate VIII issue	Receipts	17361	1843	1860	1626	1585
	Outstanding	135348	133016	150513	152139	153724
1.2.2 Indira Vikas Patras	Receipts	-3	0	0	0	0
	Outstanding	159	157	158	158	158
1.2.3 Kisan Vikas Patras	Receipts	-7911	-470	-426	-193	940
	Outstanding	-6776	-6194	-8455	-8648	-7708
1.2.4 Kisan Vikas Patras - 2014	Receipts	25340	2274	2544	2258	1019
	Outstanding	147942	145422	168720	170978	171996
1.2.5 National Saving Certificate VI issue	Receipts	41	0	0	0	23
	Outstanding	-114	-147	-114	-114	-90
1.2.6 National Saving Certificate VII issue	Receipts	32	0	0	0	16
	Outstanding	-74	-103	-74	-74	-58
1.2.7 Other Certificates	Outstanding	10378	10332	10279	10274	10315
1.3 Public Provident Fund	Receipts	13690	615	342	526	596
	Outstanding	105228	95170	107004	107530	108126

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)

Central Government Dated Securities					
Category	2021		2022		
	Sep.	Dec.	Mar.	Jun.	Sep.
	1	2	3	4	5
(A) Total (in ₹. Crore)	8235318	8439811	8529036	8784931	9098788
1 Commercial Banks	37.82	35.40	37.75	38.04	38.28
2 Non-Bank PDs	0.35	0.27	0.29	0.33	0.38
3 Insurance Companies	24.18	25.74	25.89	26.34	25.94
4 Mutual Funds	2.91	3.08	2.91	2.32	2.58
5 Co-operative Banks	1.50	1.82	1.81	1.84	1.80
6 Financial Institutions	1.17	1.69	0.94	1.09	0.98
7 Corporates	0.72	1.37	1.47	1.52	1.58
8 Foreign Portfolio Investors	1.81	1.66	1.56	1.43	1.38
9 Provident Funds	3.77	4.33	4.60	4.77	4.66
10 RBI	16.98	16.92	16.62	16.06	15.28
11. Others	8.79	7.73	6.15	6.30	7.15
11.1 State Governments	1.67	1.69	1.82	1.84	1.83

State Governments Securities					
Category	2021		2022		
	Sep.	Dec.	Mar.	Jun.	Sep.
	1	2	3	4	5
(B) Total (in ₹. Crore)	4153508	4257578	4410250	4472011	4589128
1 Commercial Banks	35.94	34.41	34.39	34.22	34.37
2 Non-Bank PDs	0.44	0.40	0.38	0.41	0.36
3 Insurance Companies	27.50	28.85	28.42	28.39	27.71
4 Mutual Funds	1.97	1.91	1.82	1.89	2.08
5 Co-operative Banks	3.60	4.07	4.04	4.06	3.89
6 Financial Institutions	1.72	1.73	1.72	1.73	1.71
7 Corporates	1.32	1.70	1.82	1.98	1.85
8 Foreign Portfolio Investors	0.03	0.02	0.02	0.02	0.02
9 Provident Funds	18.27	20.66	20.79	20.52	20.18
10 RBI	0.85	0.83	0.80	0.79	0.79
11. Others	8.38	5.40	5.81	5.99	7.05
11.1 State Governments	0.18	0.19	0.20	0.21	0.21

Treasury Bills					
Category	2021		2022		
	Sep.	Dec.	Mar.	Jun.	Sep.
	1	2	3	4	5
(C) Total (in ₹. Crore)	763582	692869	757198	1022053	920205
1 Commercial Banks	50.22	47.01	51.14	53.14	52.85
2 Non-Bank PDs	1.33	1.53	4.20	2.49	2.12
3 Insurance Companies	4.12	6.29	6.58	5.34	5.46
4 Mutual Funds	17.72	13.72	14.01	14.86	11.98
5 Co-operative Banks	1.32	1.49	1.79	1.34	1.48
6 Financial Institutions	2.12	2.36	3.53	3.73	4.17
7 Corporates	2.40	3.13	3.47	4.27	3.86
8 Foreign Portfolio Investors	0.15	0.72	0.49	0.40	0.53
9 Provident Funds	0.37	0.85	0.21	1.70	3.21
10 RBI	2.63	0.00	0.00	0.00	0.03
11. Others	17.62	22.89	14.59	12.72	14.30
11.1 State Governments	12.64	18.92	11.54	10.99	12.27

No. 46: Combined Receipts and Disbursements of the Central and State Governments

(₹ Crore)

Item	2016-17	2017-18	2018-19	2019-20	2020-21 RE	2021-22 BE
	1	2	3	4	5	6
1 Total Disbursements	4265969	4515946	5040747	5410887	6523916	7160694
1.1 Developmental	2537905	2635110	2882758	3074492	3906147	4254004
1.1.1 Revenue	1878417	2029044	2224367	2446605	3259401	3242247
1.1.2 Capital	501213	519356	596774	588233	636062	922982
1.1.3 Loans	158275	86710	61617	39654	10684	88775
1.2 Non-Developmental	1672646	1812455	2078276	2253027	2526514	2810847
1.2.1 Revenue	1555239	1741432	1965907	2109629	2334608	2602289
1.2.1.1 Interest Payments	724448	814757	894520	955801	1082302	1244457
1.2.2 Capital	115775	69370	111029	141457	189487	177328
1.2.3 Loans	1632	1654	1340	1941	2419	31230
1.3 Others	55417	68381	79713	83368	91255	95843
2 Total Receipts	4288432	4528422	5023352	5734166	6489736	7039032
2.1 Revenue Receipts	3132201	3376416	3797731	3851563	3834126	4682025
2.1.1 Tax Receipts	2622145	2978134	3278947	3231582	3175594	3829889
2.1.1.1 Taxes on commodities and services	1652377	1853859	2030050	2012578	2100982	2514708
2.1.1.2 Taxes on Income and Property	965622	1121189	1246083	1216203	1071552	1311449
2.1.1.3 Taxes of Union Territories (Without Legislature)	4146	3086	2814	2800	3060	3732
2.1.2 Non-Tax Receipts	510056	398282	518783	619981	658532	852135
2.1.2.1 Interest Receipts	33220	34224	36273	31137	39830	33198
2.2 Non-debt Capital Receipts	69063	142433	140287	110094	54861	201138
2.2.1 Recovery of Loans & Advances	20942	42213	44667	59515	21151	19581
2.2.2 Disinvestment proceeds	48122	100219	95621	50578	33710	181557
3 Gross Fiscal Deficit [1 - (2.1 + 2.2)]	1064704	997097	1102729	1449230	2634928	2277532
3A Sources of Financing: Institution-wise						
3A.1 Domestic Financing	1046708	989167	1097210	1440548	2580406	2276017
3A.1.1 Net Bank Credit to Government	617123	144792	387091	571872	890012	-----
3A.1.1.1 Net RBI Credit to Government	195816	-144847	325987	190241	107494	-----
3A.1.2 Non-Bank Credit to Government	429585	844375	710119	868676	1690394	-----
3A.2 External Financing	17997	7931	5519	8682	54522	1514
3B Sources of Financing: Instrument-wise						
3B.1 Domestic Financing	1046708	989167	1097210	1440548	2580406	2276017
3B.1.1 Market Borrowings (net)	689821	794856	795845	971378	1778062	1620936
3B.1.2 Small Savings (net)	35038	71222	88961	209232	455724	367863
3B.1.3 State Provident Funds (net)	45688	42351	51004	38280	47300	45504
3B.1.4 Reserve Funds	-6436	18423	-18298	10411	-3450	5051
3B.1.5 Deposits and Advances	17792	25138	66289	-14227	29050	28868
3B.1.6 Cash Balances	-22463	-12476	17395	-323279	34179	121663
3B.1.7 Others	287268	49653	96014	548753	239540	86132
3B.2 External Financing	17997	7931	5519	8682	54522	1514
<i>4 Total Disbursements as per cent of GDP</i>	<i>27.7</i>	<i>26.4</i>	<i>26.7</i>	<i>26.6</i>	<i>33.0</i>	<i>32.1</i>
<i>5 Total Receipts as per cent of GDP</i>	<i>27.9</i>	<i>26.5</i>	<i>26.6</i>	<i>28.2</i>	<i>32.9</i>	<i>31.6</i>
<i>6 Revenue Receipts as per cent of GDP</i>	<i>20.3</i>	<i>19.8</i>	<i>20.1</i>	<i>18.9</i>	<i>19.4</i>	<i>21.0</i>
<i>7 Tax Receipts as per cent of GDP</i>	<i>17.0</i>	<i>17.4</i>	<i>17.4</i>	<i>15.9</i>	<i>16.1</i>	<i>17.2</i>
<i>8 Gross Fiscal Deficit as per cent of GDP</i>	<i>6.9</i>	<i>5.8</i>	<i>5.8</i>	<i>7.1</i>	<i>13.3</i>	<i>10.2</i>

...: 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 October-2022					
		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	284.65	24	1624.87	24	2137.38	9
2	Arunachal Pradesh	-	-	-	-	-	-
3	Assam	210.14	5	-	-	-	-
4	Bihar	-	-	-	-	-	-
5	Chhattisgarh	-	-	-	-	-	-
6	Goa	-	-	-	-	-	-
7	Gujarat	-	-	-	-	-	-
8	Haryana	387.79	22	575.50	16	-	-
9	Himachal Pradesh	-	-	-	-	-	-
10	Jammu & Kashmir UT	-	-	868.50	27	244.50	8
11	Jharkhand	-	-	-	-	-	-
12	Karnataka	-	-	-	-	-	-
13	Kerala	-	-	673.60	10	227.24	1
14	Madhya Pradesh	-	-	-	-	-	-
15	Maharashtra	-	-	-	-	-	-
16	Manipur	-	-	189.85	28	135.49	14
17	Meghalaya	68.62	19	135.58	16	11.87	6
18	Mizoram	-	-	13.32	2	-	-
19	Nagaland	-	-	-	-	-	-
20	Odisha	-	-	-	-	-	-
21	Puducherry	21.08	2	-	-	-	-
22	Punjab	1221.82	19	-	-	-	-
23	Rajasthan	1544.18	18	-	-	-	-
24	Tamil Nadu	-	-	-	-	-	-
25	Telangana	694.99	31	1228.56	31	279.39	9
26	Tripura	-	-	-	-	-	-
27	Uttar Pradesh	-	-	-	-	-	-
28	Uttarakhand	153.60	9	350.87	5	-	-
29	West Bengal	-	-	-	-	-	-

Note: 1. SDF is availed by State Governments against the collateral of Consolidated Sinking Fund (CSF), Guarantee Redemption Fund (GRF) & Auction Treasury Bills (ATBs) balances and other investments in government securities.

2. WMA is advance by Reserve Bank of India to State Governments for meeting temporary cash mismatches.

3. OD is advanced to State Governments beyond their WMA limits.

4. Average Availed is the total accommodation (SDF/WMA/OD) availed divided by number of days for which accommodation was extended during the month.

5. - : Nil.

Source: Reserve Bank of India.

No. 48: Investments by State Governments

(₹ Crore)

Sr. No	State/Union Territory	As on end of October 2022			
		Consolidated Sinking Fund (CSF)	Guarantee Redemption Fund (GRF)	Government Securities	Auction Treasury Bills (ATBs)
	1	2	3	4	5
1	Andhra Pradesh	9764	961	0	0
2	Arunachal Pradesh	2146	3	0	0
3	Assam	4006	73	0	0
4	Bihar	6589	-	0	0
5	Chhattisgarh	6017	-	1	4008
6	Goa	802	386	0	0
7	Gujarat	8475	564	0	0
8	Haryana	1428	1431	0	0
9	Himachal Pradesh	-	-	0	0
10	Jammu & Kashmir UT	-	-	0	0
11	Jharkhand	1015	-	0	0
12	Karnataka	10814	0	0	33114
13	Kerala	2514	-	0	0
14	Madhya Pradesh	-	1078	0	0
15	Maharashtra	54795	1189	0	12000
16	Manipur	58	118	0	0
17	Meghalaya	920	64	8	0
18	Mizoram	309	55	0	0
19	Nagaland	1503	39	0	0
20	Odisha	15333	1723	99	45460
21	Puducherry	447	-	0	1223
22	Punjab	5246	0	0	0
23	Rajasthan	-	-	129	4400
24	Tamil Nadu	7875	-	18	2013
25	Telangana	6659	1455	0	0
26	Tripura	816	15	0	1200
27	Uttarakhand	4053	160	0	0
28	Uttar Pradesh	3623	-	116	0
29	West Bengal	10675	785	239	0
	Total	165881	10099	609	103419

Notes: 1. CSF and GRF are reserve funds maintained by some State Governments with the Reserve Bank of India.
2. ATBs include Treasury bills of 91 days, 182 days and 364 days invested by State Governments in the primary market.
3. - : Not Applicable (not a member of the scheme).

No. 49: Market Borrowings of State Governments

(₹ Crore)

Sr. No.	State	2020-21		2021-22		2022-23						Total amount raised, so far in 2022-23	
		Gross Amount Raised	Net Amount Raised	Gross Amount Raised	Net Amount Raised	August		September		October		Gross	Net
						Gross Amount Raised	Net Amount Raised	Gross Amount Raised	Net Amount Raised	Gross Amount Raised	Net Amount Raised		
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Andhra Pradesh	50896	41915	46443	36692	7000	6130	3000	2130	2500	1630	42390	36155
2	Arunachal Pradesh	767	767	563	530	-	-	-	-	-	-50	-	-70
3	Assam	15030	14230	12753	10753	2400	2400	1600	1300	1700	1700	9700	9400
4	Bihar	27285	24685	28489	24334	3000	3000	4000	3922	6000	6000	13000	12172
5	Chhattisgarh	13000	10500	4000	913	-	-	-	-	-	-	-	-
6	Goa	3354	3054	2000	1450	-	-150	300	100	200	200	600	250
7	Gujarat	44780	33280	31054	13554	3500	2300	2000	2000	7000	5000	21000	12100
8	Haryana	30000	25550	30500	20683	3000	2450	2500	1950	2500	1400	23000	14520
9	Himachal Pradesh	6000	3755	4000	1875	1500	1200	2500	2300	-	-200	5000	3440
10	Jammu & Kashmir UT	9328	6020	8562	5373	-	-	500	500	800	660	3550	2910
11	Jharkhand	9400	8900	5000	3191	-	-300	-	-	-	-500	-	-1000
12	Karnataka	69000	61900	59000	49000	-	-	-	-	-	-3500	-	-3500
13	Kerala	28566	23066	27000	18120	6000	4000	1436	436	2500	1500	11436	4436
14	Madhya Pradesh	45573	38773	22000	13900	2000	-	4000	4000	2000	1500	10000	7500
15	Maharashtra	69000	50022	68750	40790	-	-1700	4000	-185	11000	9000	45000	26315
16	Manipur	1302	1044	1476	1326	-	-90	100	50	-	-	750	475
17	Meghalaya	1777	1587	1608	1298	200	150	-	-	300	300	900	800
18	Mizoram	944	677	747	447	200	150	100	100	100	100	740	625
19	Nagaland	1721	1366	1727	1222	226	-24	-	-	-	-	876	626
20	Odisha	3000	500	0	-6473	-	-500	-	-	-	-1000	-	-4000
21	Puducherry	1390	790	1374	841	-	-	200	200	-	-100	400	300
22	Punjab	32995	23467	25814	12428	6500	5100	5105	3693	4650	3650	24355	16001
23	Rajasthan	57359	44273	51149	38243	5000	4000	2500	1000	4500	3230	27000	18918
24	Sikkim	1292	1292	1511	1471	-	-	250	215	200	165	600	530
25	Tamil Nadu	87977	76796	87000	72500	11000	9500	6000	2875	6000	1750	39000	26153
26	Telangana	43784	37365	45716	38667	4500	3870	3500	2870	3000	2370	23000	18485
27	Tripura	1916	1631	300	0	-	-	-	-	-	-	-	-125
28	Uttar Pradesh	75500	59185	62500	42355	2500	1500	2500	-	9000	6024	14000	2291
29	Uttarakhand	6200	5208	3200	1800	-	-	-	-	500	500	500	500
30	West Bengal	59680	50180	67390	45199	1000	-500	7500	6000	6000	4000	30000	18000
	Grand Total	798816	651777	701626	492483	59526	42486	53591	35456	70450	45330	346797	224208

- : Nil.

Note: The State of J&K has ceased to exist constitutionally from October 31, 2019 and the liabilities of the State continue to remain as liabilities of the new UT of Jammu and Kashmir.

Source: Reserve Bank of India.

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise

(Amount in ₹ Crore)

Item	2019-20				
	Q1	Q2	Q3	Q4	Annual
Net Financial Assets (I-II)	238613.6	476724.8	386450.4	530769.8	1632558.5
<i>Per cent of GDP</i>	4.8	9.8	7.5	10.3	8.1
I. Financial Assets	398076.7	567753.2	517351.0	924069.3	2407250.2
<i>Per cent of GDP</i>	8.1	11.7	10.1	18.0	12.0
of which:					
1.Total Deposits (a+b)	12239.0	296625.6	124015.7	451698.3	884578.5
(a) Bank Deposits	-10550.9	278124.4	116211.9	444044.6	827830.0
i. Commercial Banks	-13293.8	269475.4	66666.7	446006.7	768855.0
ii. Co-operative Banks	2742.9	8649.0	49545.2	-1962.1	58975.0
(b) Non-Bank Deposits	22789.9	18501.2	7803.7	7653.7	56748.5
2. Life Insurance Funds	117873.1	108209.1	110373.8	37714.2	374170.2
3. Provident and Pension Funds (including PPF)	104681.1	98426.3	103356.1	193739.0	500202.5
4. Currency	61244.1	-26104.8	86832.6	160690.2	282662.1
5. Investments	43936.8	43018.8	22655.1	-11953.8	97656.9
of which:					
(a) Mutual Funds	23303.5	38382.2	19191.1	-19191.1	61685.7
(b) Equity	18648.2	2172.4	936.2	4981.0	26737.8
6. Small Savings (excluding PPF)	57038.5	46514.1	69053.6	91117.2	263723.4
II. Financial Liabilities	159463.1	91028.5	130900.6	393299.5	774691.7
<i>Per cent of GDP</i>	3.2	1.9	2.6	7.7	3.9
Loans (Borrowings) from					
1. Financial Corporations (a+b)	159429.6	90994.9	130867.1	393266.0	774557.6
(a) Banking Sector	140261.4	58074.4	114905.9	196581.1	509822.8
of which:					
Commercial Banks	135754.1	57135.0	87377.4	202214.2	482480.6
(b) Other Financial Institutions	19168.2	32920.5	15961.2	196684.8	264734.8
i. Non-Banking Financial Companies	-519.7	22976.7	29930.7	198264.3	250652.0
ii. Housing Finance Companies	17033.0	8093.1	-15710.4	-3093.1	6322.6
iii. Insurance Companies	2655.0	1850.8	1740.9	1513.6	7760.2
2. Non-Financial Corporations (Private Corporate Business)	33.8	33.8	33.8	33.8	135.1
3. General Government	-0.3	-0.3	-0.3	-0.3	-1.0

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise (Contd.)

(Amount in ₹ Crore)

Item	2020-21				
	Q1	Q2	Q3	Q4	Annual
Net Financial Assets (I-II)	600422.5	573643.2	481433.5	719844.5	2375343.7
<i>Per cent of GDP</i>	15.5	12.1	8.8	12.5	12.0
I. Financial Assets	805869.5	612224.3	651241.3	1092617.4	3161952.5
<i>Per cent of GDP</i>	20.8	13.0	12.0	19.0	16.0
of which:					
1.Total Deposits (a+b)	297412.4	278631.7	158172.2	525550.7	1259767.1
(a) Bank Deposits	281191.3	264565.3	147096.0	527056.7	1219909.2
i. Commercial Banks	279010.5	262033.7	143558.6	471730.9	1156333.7
ii. Co-operative Banks	2180.8	2531.6	3537.3	55325.8	63575.6
(b) Non-Bank Deposits	16221.1	14066.4	11076.3	-1506.0	39857.9
2. Life Insurance Funds	123291.4	142365.7	156438.6	141120.0	563215.8
3. Provident and Pension Funds (including PPF)	119666.9	110916.6	108512.2	207604.5	546700.1
4. Currency	202432.7	21286.9	91456.0	66800.5	381976.1
5. Investments	6249.8	-12956.4	67659.3	63624.0	124576.7
of which:					
(a) Mutual Funds	-16021.0	-28837.7	57675.4	51267.0	64083.8
(b) Equity	18599.4	8291.5	5307.1	6333.3	38531.2
6. Small Savings (excluding PPF)	55760.7	70924.2	67947.4	86862.2	281494.6
II. Financial Liabilities	205447.0	38581.1	169807.8	372772.9	786608.8
<i>Per cent of GDP</i>	5.3	0.8	3.1	6.5	4.0
Loans (Borrowings) from					
1. Financial Corporations (a+b)	205490.3	38624.3	169851.0	372816.9	786782.5
(a) Banking Sector	211058.8	13213.0	139622.0	284732.6	648626.4
of which:					
Commercial Banks	211259.3	13213.8	140514.3	242476.0	607463.5
(b) Other Financial Institutions	-5568.6	25411.3	30229.0	88084.4	138156.1
i. Non-Banking Financial Companies	-15450.4	21627.1	15921.2	61326.1	83424.0
ii. Housing Finance Companies	10516.6	2875.1	13048.5	25336.1	51776.2
iii. Insurance Companies	-634.8	909.2	1259.3	1422.2	2955.9
2. Non-Financial Corporations (Private Corporate Business)	33.8	33.8	33.8	33.0	134.4
3. General Government	-77.0	-77.0	-77.0	-77.0	-308.0

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise (Concl'd.)

(Amount in ₹ Crore)

Item	2021-22				
	Q1	Q2	Q3	Q4	Annual
Net Financial Assets (I-II)	519781.2	358325.2	453302.7	636259.8	1967668.9
<i>Per cent of GDP</i>	10.1	6.4	7.2	9.6	8.3
I. Financial Assets	382780.7	547346.2	834009.6	796341.7	2560478.2
<i>Per cent of GDP</i>	7.5	9.7	13.2	12.0	10.8
of which:					
1. Total Deposits (a+b)	-84377.1	202652.1	425821.4	151374.9	695471.4
(a) Bank Deposits	-106507.3	197301.2	422819.5	140297.2	653910.7
i. Commercial Banks	-108037.7	195617.4	418642.9	145510.5	651733.1
ii. Co-operative Banks	1530.4	1683.8	4176.7	-5213.3	2177.6
(b) Non-Bank Deposits	22130.2	5350.9	3001.9	11077.7	41560.7
2. Life Insurance Funds	114617.8	127356.0	103154.9	95681.7	440810.4
3. Provident and Pension Funds (including PPF)	126469.7	108777.0	91543.9	254877.2	581667.9
4. Currency	128660.2	-68631.2	62793.3	146845.0	269667.4
5. Investments	24929.6	82305.4	69760.9	50980.8	227976.7
of which:					
(a) Mutual Funds	14573.0	63151.3	37912.2	44963.7	160600.1
(b) Equity	4502.5	13218.5	27808.2	3084.1	48613.3
6. Small Savings (excluding PPF)	71423.1	93829.6	79877.9	95524.7	340655.3
II. Financial Liabilities	-137000.5	189021.0	380706.9	160081.8	592809.2
<i>Per cent of GDP</i>	-2.7	3.4	6.0	2.4	2.5
Loans (Borrowings) from					
1. Financial Corporations (a+b)	-137021.8	188999.7	380685.6	160060.6	592724.1
(a) Banking Sector	-113662.5	134166.1	320160.2	153323.3	493987.0
of which:					
Commercial Banks	-108061.2	135728.8	317452.5	152364.2	497484.4
(b) Other Financial Institutions	-23359.3	54833.7	60525.5	6737.3	98737.1
i. Non-Banking Financial Companies	-31118.4	28880.1	29479.8	-31016.3	-3774.8
ii. Housing Finance Companies	7132.0	24403.8	29494.8	37436.2	98466.8
iii. Insurance Companies	627.1	1549.8	1550.9	317.4	4045.2
2. Non-Financial Corporations (Private Corporate Business)	33.8	33.8	33.8	33.8	135.1
3. General Government	-12.5	-12.5	-12.5	-12.5	-50.0

Notes: 1. Net Financial Savings of households refer to the flow of net financial assets, which represents change in financial assets held by households minus change in their financial liabilities.
2. Revisions in small savings and PPF are mainly on account of quarterly figures being derived from monthly receipts data sourced from Controller General of Accounts, Government of India.
3. Revisions in bank deposits for 2021-22 are attributed to the lower share of households in total deposits as per BSR-2.
4. Data as ratios to GDP have been calculated based on the Provisional Estimates of National Income 2021-22 released on May 31, 2022.
5. Figures in the columns may not add up to the total due to rounding off.

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators

(Amount in ₹ Crore)

Item	Jun-2019	Sep-2019	Dec-2019	Mar-2020
Financial Assets (a+b+c+d)	16315506.3	16632816.5	17010694.5	17180616.2
<i>Per cent of GDP</i>	<i>84.7</i>	<i>85.4</i>	<i>86.2</i>	<i>85.6</i>
(a) Bank Deposits (i+ii)	8858293.4	9136417.9	9252629.8	9696674.3
i. Commercial Banks	8131543.2	8401018.6	8467685.3	8913692.0
ii. Co-operative Banks	726750.2	735399.2	784944.4	782982.3
(b) Life Insurance Funds	3883609.7	3930727.6	4049902.5	3884771.5
(c) Currency	2010842.9	1984738.1	2071570.7	2232261.0
(d) Mutual Funds	1404631.5	1412654.1	1468727.6	1197092.9
Financial Liabilities (a+b)	6370092.6	6461087.5	6591954.6	6985220.6
<i>Per cent of GDP</i>	<i>33.1</i>	<i>33.2</i>	<i>33.4</i>	<i>34.8</i>
Loans (Borrowings) from				
(a) Banking Sector	5148115.0	5206189.4	5321095.3	5517676.4
of which:				
i. Commercial Banks	4668496.4	4725631.3	4813008.7	5015222.9
ii. Co-operative Banks	478956.2	479656.9	506946.6	501074.8
(b) Other Financial Institutions	1221977.5	1254898.1	1270859.3	1467544.1
of which:				
i. Non-Banking Financial Companies	451922.3	474899.0	504829.7	703094.0
ii. Housing Finance Companies	673312.1	681405.2	665694.8	662601.7

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators (Contd.)

(Amount in ₹ Crore)

Item	Jun-2020	Sep-2020	Dec-2020	Mar-2021
Financial Assets (a+b+c+d)	18039169.4	18606364.4	19333484.1	20168953.3
<i>Per cent of GDP</i>	<i>94.9</i>	<i>98.6</i>	<i>100.8</i>	<i>101.9</i>
(a) Bank Deposits (i+ii)	9977865.6	10242430.9	10389526.9	10916583.6
i. Commercial Banks	9192702.5	9454736.2	9598294.8	10070025.7
ii. Co-operative Banks	785163.1	787694.7	791232.1	846557.9
(b) Life Insurance Funds	4102000.7	4274424.9	4551882.0	4718718.2
(c) Currency	2434693.7	2455980.6	2547436.6	2614237.0
(d) Mutual Funds	1343752.0	1443784.4	1648999.0	1730461.0
Financial Liabilities (a+b)	7190710.8	7229335.1	7399186.1	7772003.0
<i>Per cent of GDP</i>	<i>37.8</i>	<i>38.3</i>	<i>38.6</i>	<i>39.3</i>
Loans (Borrowings) from				
(a) Banking Sector	5728735.3	5741948.3	5881570.2	6166302.8
of which:				
i. Commercial Banks	5226482.2	5239696.0	5380210.4	5622686.4
ii. Co-operative Banks	500870.2	500865.3	499968.8	542221.2
(b) Other Financial Institutions	1461975.5	1487386.9	1517615.9	1605700.3
of which:				
i. Non-Banking Financial Companies	687643.6	709270.7	725191.9	786518.0
ii. Housing Finance Companies	673118.3	675993.4	689041.8	714377.9

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators (Concl.)

(Amount in ₹ Crore)

Item	Jun-2021	Sep-2021	Dec-2021	Mar-2022
Financial Assets (a+b+c+d)	20508115.7	21057343.4	21673261.7	22104312.7
<i>Per cent of GDP</i>	97.4	95.9	95.0	93.4
(a) Bank Deposits (i+ii)	10810076.3	11007377.6	11430197.1	11570494.3
i. Commercial Banks	9961988.0	10157605.4	10576248.3	10721758.8
ii. Co-operative Banks	848088.3	849772.1	853948.8	848735.5
(b) Life Insurance Funds	4894238.5	5105262.1	5175997.5	5287980.3
(c) Currency	2742897.3	2674266.1	2737059.4	2883904.4
(d) Mutual Funds	1855000.1	2064363.5	2126112.0	2152140.5
Financial Liabilities (a+b)	7634981.2	7823980.9	8204666.6	8364727.1
<i>Per cent of GDP</i>	36.3	35.6	36.0	35.3
Loans (Borrowings) from				
(a) Banking Sector	6052640.2	6186806.3	6506966.5	6660289.7
of which:				
i. Commercial Banks	5514625.2	5650354.1	5967806.6	6120170.8
ii. Co-operative Banks	536604.9	535027.3	537720.1	538664.3
(b) Other Financial Institutions	1582341.0	1637174.6	1697700.1	1704437.4
of which:				
i. Non-Banking Financial Companies	755399.6	784279.7	813759.5	782743.2
ii. Housing Finance Companies	721510.0	745913.7	775408.5	812844.7

- Notes:** 1. Data have been compiled for select financial instruments only (loans from Banking Sector, NBFCs and HFCs) for which data are available.
2. Data as ratios to GDP have been calculated based on the Provisional Estimates of National Income 2021-22 released on May 31, 2022.
3. Figures in the columns may not add up to the total due to rounding off.

Explanatory Notes to the Current Statistics

Table No. 1

1.2& 6: Annual data are average of months.
 3.5 & 3.7: Relate to ratios of increments over financial year so far.
 4.1 to 4.4, 4.8,4.9 &5: Relate to the last friday of the month/financial year.
 4.5, 4.6 & 4.7: Relate to five major banks on the last Friday of the month/financial year.
 4.10 to 4.12: Relate to the last auction day of the month/financial year.
 4.13: Relate to last day of the month/ financial year
 7.1&7.2: Relate to Foreign trade in US Dollar.

Table No. 2

2.1.2: Include paid-up capital, reserve fund and Long-Term Operations Funds.
 2.2.2: Include cash, fixed deposits and short-term securities/bonds, e.g., issued by IIFC (UK).

Table No. 4

Maturity-wise position of outstanding forward contracts is available at <http://nsdp.rbi.org.in> under "Reserves Template".

Table No. 5

Special refinance facility to Others, i.e. to the EXIM Bank, is closed since March 31, 2013.

Table No. 6

For scheduled banks, March-end data pertain to the last reporting Friday.
 2.2: Exclude balances held in IMF Account No.1, RBI employees' provident fund, pension fund, gratuity and superannuation fund.

Table Nos. 7 & 11

3.1 in Table 7 and 2.4 in Table 11: Include foreign currency denominated bonds issued by IIFC (UK).

Table No. 8

NM₂ and NM₃ do not include FCNR (B) deposits.
 2.4: Consist of paid-up capital and reserves.
 2.5: includes other demand and time liabilities of the banking system.

Table No. 9

Financial institutions comprise EXIM Bank, SIDBI, NABARD and NHB.
 L₁ and L₂ are compiled monthly and L₃ quarterly.
 Wherever data are not available, the last available data have been repeated.

Table No. 13

Data against column Nos. (1), (2) & (3) are Final and for column Nos. (4) & (5) data are Provisional.

Table No. 14

Data in column Nos. (4) & (8) are Provisional.

Table No. 17

2.1.1: Exclude reserve fund maintained by co-operative societies with State Co-operative Banks

2.1.2: Exclude borrowings from RBI, SBI, IDBI, NABARD, notified banks and State Governments.

4: Include borrowings from IDBI and NABARD.

Table No. 24

Primary Dealers (PDs) include banks undertaking PD business.

Table No. 30

Exclude private placement and offer for sale.

1: Exclude bonus shares.

2: Include cumulative convertible preference shares and equi-preference shares.

Table No. 32

Exclude investment in foreign currency denominated bonds issued by IIFC (UK), SDRs transferred by Government of India to RBI and foreign currency received under SAARC 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 2020-21 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 (WLAOs). 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 2020-21 pertains to the Provisional Estimates of National Income released by National Statistics Office on May 31, 2021. GDP for 2021-22 is from Union Budget 2021-22. 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**.

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1. Reserve Bank of India Bulletin 2023	₹350 per copy ₹250 per copy (concessional rate*) ₹4,000 (one year subscription) ₹3,000 (one year concessional rate*)	US\$ 15 per copy US\$ 150 (one-year subscription) (inclusive of air mail courier charges)
2. Handbook of Statistics on the Indian States 2021-22	₹550 (Normal) ₹600 (inclusive of postage)	US\$ 24 (inclusive of air mail courier charges)
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10. Reserve Bank of India Occasional Papers Vol. 42, No. 1, 2021	₹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. 42, No. 2, 2021	₹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)
13. Report on Municipal Finances	₹300 per copy (over the counter) ₹350 per copy (inclusive of postal charges)	US\$ 16 per copy (inclusive of air mail courier charges)

Notes

- Many of the above publications are available at the RBI website (www.rbi.org.in).
 - Time Series data are available at the Database on Indian Economy (<http://dbie.rbi.org.in>).
 - 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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