National Investment & Infrastructure Fund

HOW WE TRACK
INDIA'S MACRO STORY

January 2024

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How **deep macro research** underpins NIIF's investment decisions

At NIIF, we track hundreds of variables in our monthly reports which help us identify key turning points in the Indian, and sometimes global, economy. The most interesting part is to analyse all these diverse turning points to make sense of the broader economic picture that emerges.

For a long-term investor like NIIF, knowing these inflection points helps shape our investor and portfolio strategy.

One big question we faced from the outset was: What factors should we analyse? How do you choose what is material and what is not? It is easy "to boil the ocean" as we get a flurry of statistics from many, diverse sources. Developing a framework becomes critical.

As you will see in the pages that follow, we've developed the **Growth, Rates, Inflation, Exchange rate (GRIX, pronounced Greeks) framework** to sharpen our focus on what is critical from an investment perspective. We believe these four factors are key macro inputs in any investment model.

The journey of creating the GRIX framework has been a long, evolving one. Three years ago, when the Research team was set up, we created ways to compile, analyse, and disseminate economic data. This eventually led to a monthly report that covered key factors grouped by macro, markets, infrastructure, and investments within India.

As we engaged more deeply with our investment teams, we realised the need for weekly as well as monthly updates. This started to have a bearing on how our investment teams projected certain macro variables to the Investment Committee. We noted that the key macro factors were the GRIX; the rest were sector-specific assumptions.

This led to the creation of our GRIX matrix looking at several variables over various time periods.

We then focused on the necessary tools and analyses to build a strong foundation for our forecasts. What you will find in these pages are some of the analyses for each of these four factors over the course of 2023.

These analyses were typically triggered by some shock or change in underlying macro dynamics. For example, when Indian inflation and yields behaved more smoothly than the US, we sought to understand these dynamics in greater historical detail. We looked at the patterns to understand if this was a structural change ("this time is different") or if there was a "mean reversion". Similarly, when the monsoon was delayed by more than a week, we wanted to understand how that impacts the quantity of rainfall.

Sometimes these analyses became possible when data became available. Digital India has created an exhaust of data generated and collected at various public forums. One such analysis is our tolls *HeatMaps* based on copious amounts of data. In these analyses, which combine sectoral knowledge with expertise in data sciences and visualisation, we have created a valuable partnership with Thurro/Adqvest.

With investors, we share our insights quarterly on key trends in India's economy. We also engage closely with many policy makers who have displayed keen interest in understanding these macro analyses in greater detail.

We hope you find the framework and the highlighted analyses interesting and insightful.

Akhilesh Tilotia
Head of Research
& Chief of Staff,
National Investment &
Infrastructure Fund Limited

At NIIF, we developed the **GRIX** ("Greeks") framework to track India's macro story

We created a macro framework called the GRIX (pronounced "Greeks") SML which looks at:

G: real GDP growth

R: 10-year G-sec interest rates

I: consumer inflation

X: USD/INR exchange rate

across **three time periods** –
(i) **S**hort (1-year),
(ii) **M**edium (2-5 years), and
(iii) **L**ong-term (>5 years)

- These fundamental macroeconomic drivers influence cash flows, discount rates, and hence, asset returns across time periods

- The GRIX SML framework anchors NIIF Research in identifying trends and risks that may emerge. Forecasts of these variables, especially over the long-term, help create a consistent model of the economy

- All the analyses that we undertake is to deepen our understanding of at least one of the cells of the matrix (see next page)

- In this document, we give you a sneak-peek into some of the key analyses that we did in 2023

The **GRIX SML forecast matrix** reflects our current understanding

Period	Growth Real GDP	Interest rates 10-year G-sec	Inflation CPI	Exchange rate change (% pa) USD-INR
Short-term *1-year*	6.2	6.9	4.7	1.8
Medium-term *2-5 years*	6.3	7.0	4.4	(2.0)
Long-term *> 5 years*	6.0	7.0	4.0	(2.0)
Realised average *(over the last n years ending FY2023)*:				
5 years	4.0	6.7	4.6	(2.7)
10 years	5.7	7.2	4.5	(2.8)
20 years	6.3	7.3	6.3	(2.9)

Source: NIIF Research (forecasts as of December 2023); all figures in %

Note: Forecast for exchange rate is for CY2024; FY2025 for rest. Positive change indicates appreciation of INR vs USD while negative change indicates depreciation of INR

Our **approach** to developing SML forecast matrix for GRIX

✳ Short-term forecasts

Based on the median of the forecasts of a monthly survey of ~30 analysts conducted by Bloomberg; for interest rates survey based on ~10 analysts

✳ Long-term forecasts

i. **GDP growth** is based on the realised average of last many years growth with some judgement added in
ii. **Inflation** is based on RBI Monetary Policy Committee's target of 4%,
iii. We expect the "**real interest rates**" (which is a one-year construct) to be a positive 1% and the yield curve to have a 2% steepness between year 10 over year 1 – this takes us to 4% + 1% + 2% = 7% for long-term nominal rates, and
iv. **Exchange rate (USD/INR)** expected to depreciate by 2% each year, compared to the realised averages of ~3% p.a. based on long-term trends over the last 20 years

✳ Medium-term forecasts

Essentially, these are our expected pathways for the short-term forecasts to reach long-term expected values.
i. **GDP growth** forecasts are aligned with IMF's medium-term forecasts – updated using World Economic Outlook, Oct 2023
ii. **Exchange rate:** IMF forecasts a near nil depreciation of INR against USD over the next five years. However, we conservatively continue to maintain the expected long-term depreciation of 2% p.a. over the medium-term

Forecasts are, by definition, forward-looking and subject to large global and local risks and uncertainties.

Our takeaways

Our GRIX model shows that on all four parameters currently, India has stable and positive forecasts. Growth is strong and is being upgraded, inflation and rates are expected to fluctuate in a small range, and if IMF forecasts do come true, the exchange rate will be stable this decade. A strong start as we head into CY2024.

GROWTH

- HIGH GROWTH & GROWING ECONOMY
- STRONG DEMAND
- NEW ECONOMIC INDICATORS
- EMPLOYMENT DYNAMICS

RATES

- GREEN BONDS
- INVESTMENTS
- FISCAL SPACE
- YIELDS

INFLATION

- INFLATION MANAGEMENT
- UNCERTAIN T^2
- MONETARY TRANSMISSION
- MONSOON

EXCHANGE RATE

- EXCHANGE RATE
- EXPANDING TRADE
- DELIVERED RETURNS

The framework starts with "G" for Growth

Growth is the elixir that uplifts citizens and attracts investors

How we track India's growth

#	Key Insight from our research in 2023	Metric
1	India is expected to be the third largest economy by FY2028, closing in on a GDP of USD 5 trillion. India remains a global outlier in business optimism. Key agencies revise their FY2024 forecasts upwards to 6.3% (median) from 6.0%	HIGH GROWTH & GROWING ECONOMY
2	Demand for core infra inputs (cement, steel, etc.) and energy remains strong. India's digital public infrastructure enabling all time high UPI payments and electronic toll collection in 2023	STRONG DEMAND
3	We have three new ways to track growth: (i) growth in industries across states, (ii) economic activity across income levels, and (iii) movement across toll roads	NEW ECONOMIC INDICATORS
4	India's labor force is estimated to have increased over the last five years, as per a government survey, likely driving demand for goods, services, and infra. However, another employment (private) survey shows labor force stagnating	EMPLOYMENT DYNAMICS

India's growth story remains **strong** - expected to be the **third largest economy** by FY2028

India took eight years to move from the tenth largest economy to sixth; onwards to third in next eight
Ranking of economies according to GDP, current prices (%), CY2001 to CY2027E

Rank	2001	2011	2019	2021	2027P
1	US	US	US	US	US
2	Japan	China	China	China	China
3	Germany	Japan	Japan	Japan	India
4	UK	Germany	Germany	Germany	Germany
5	France	France	UK	India	Japan
6	China	UK	India	UK	UK
7	Italy	Brazil	France	France	France
8	Mexico	Italy	Italy	Italy	Brazil
9	Canada	Russia	Brazil	Canada	Canada
10	Spain	India	Canada	Russia	Italy

Source: International Monetary Fund's World Economic Outlook (October 2023), NIIF Research
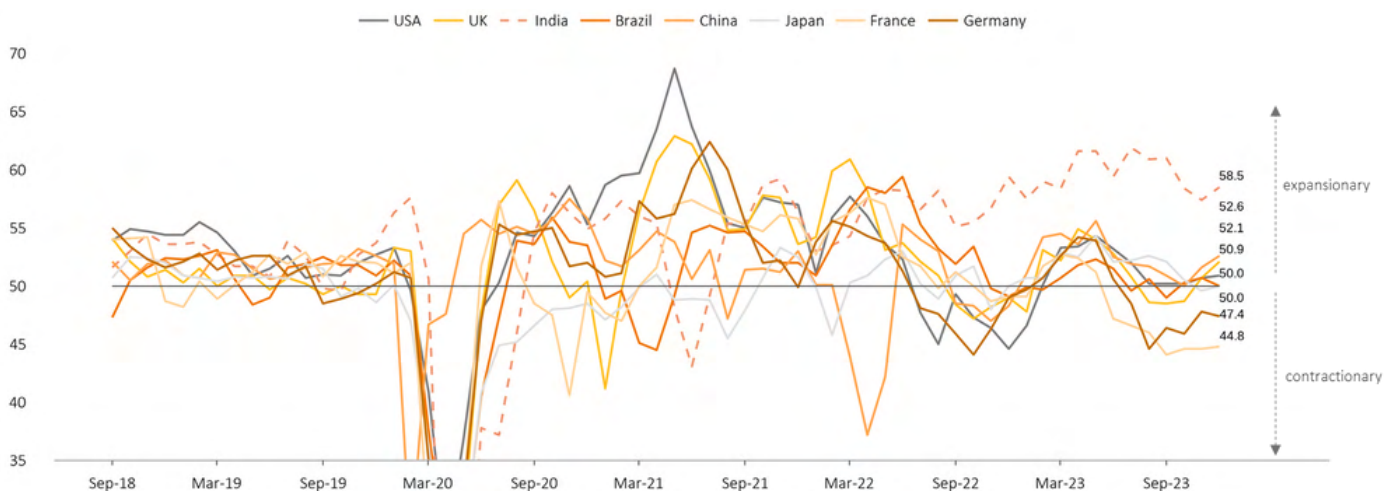Note:
1) For India, data and forecasts are presented on a fiscal year basis (Apr-Mar) with FY 2021-22 (starting in April 2021) shown in the 2021 column. For other countries, data shown is for the respective calendar year
2) Ranking for 2027 is based on GDP estimates by IMF

This shows up in India being a significant global outlier in business optimism

India's composite Purchasing Managers' Index (PMI) stands out among other major economies. The composite PMI index is a key measure of activity and optimism at companies across manufacturing and services

Monthly PMI composite indices across major economies, FY2019-FY2024 (Dec '23)

Legend: USA, UK, India, Brazil, China, Japan, France, Germany

Right-axis values: 58.5, 52.6, 52.1, 50.9, 50.0, 50.0, 47.4, 44.8

expansionary / contractionary

X-axis: Sep-18, Mar-19, Sep-19, Mar-20, Sep-20, Mar-21, Sep-21, Mar-22, Sep-22, Mar-23, Sep-23
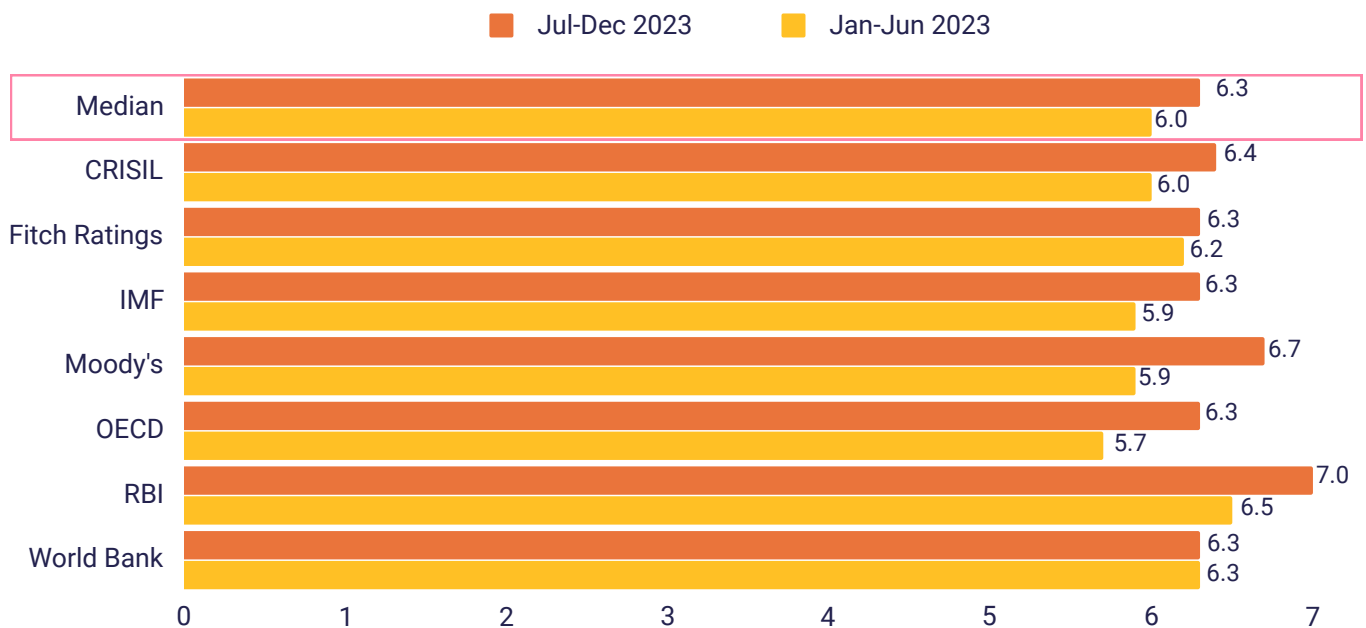
Source: Thurro, S&P, NIIF Research

Note:
1. Impact of Covid on economic activity seen across countries for months between Feb '20 and May '20 and hence not shown in the chart.
2. The headline PMI Composite (Output) Index is a weighted average of the headline PMI Services Index and the Manufacturing Output Index (not the headline PMI manufacturing). Hence, a simple average of PMI Services and Manufacturing indices may not reflect in the PMI Composite

Strong underlying growth meant that **key agencies** we track revised targets upwards

Median GDP growth projection for FY2024 revised upwards to 6.3%; RBI raises its forecast to 7.0%; government has recently upped it to 7.3%

Projections for real GDP growth in FY2024 (% yoy), Jan '23 to Dec '23

■ Jul-Dec 2023   ■ Jan-Jun 2023

Agency	Jul-Dec 2023	Jan-Jun 2023
Median	6.3	6.0
CRISIL	6.4	6.0
Fitch Ratings	6.3	6.2
IMF	6.3	5.9
Moody's	6.7	5.9
OECD	6.3	5.7
RBI	7.0	6.5
World Bank	6.3	6.3

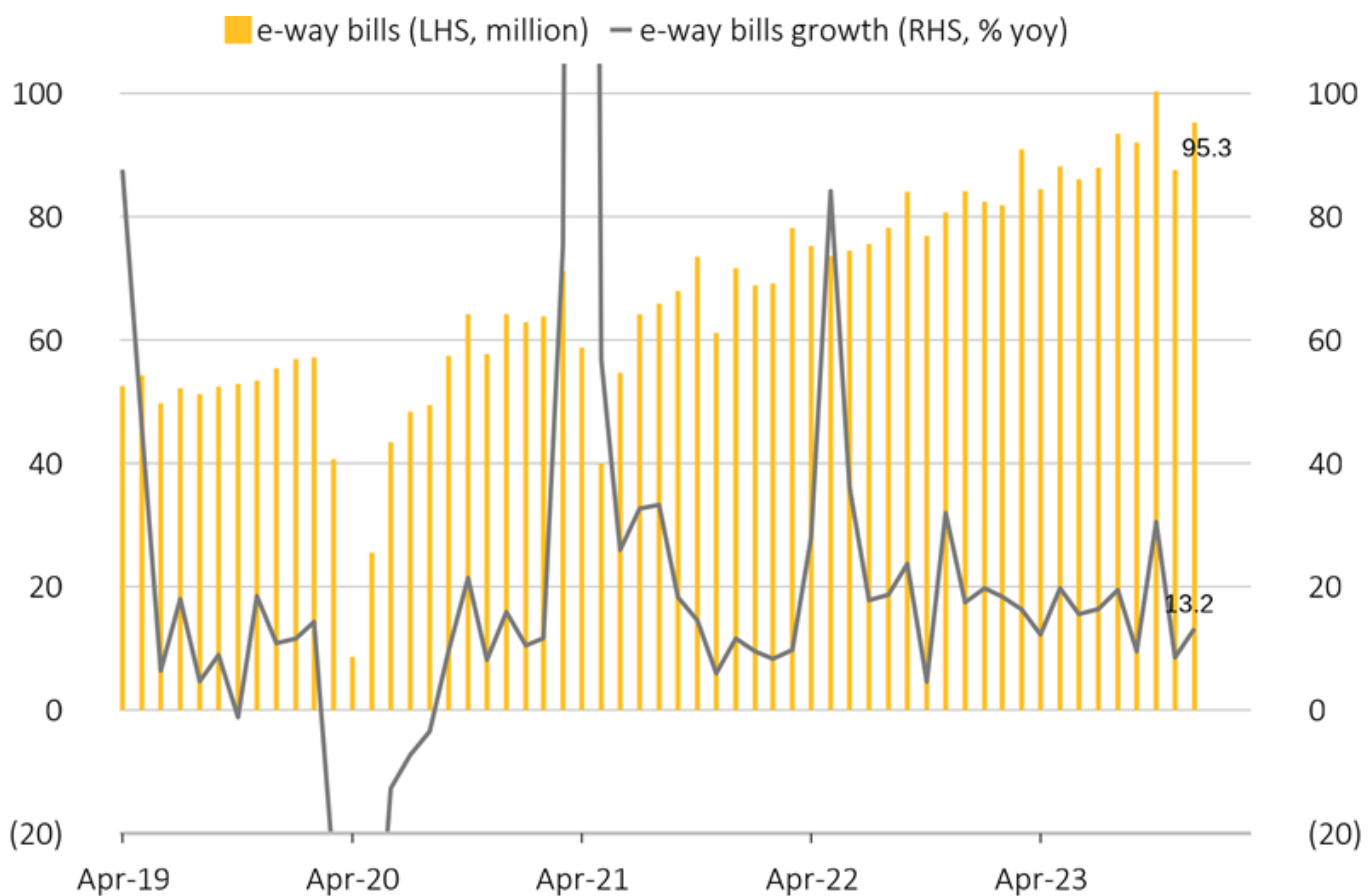Source: Centre for Monitoring Indian Economy, NIIF Research

Note:
1. The data shown above is the projections made by same agencies across two time periods

Robust domestic demand: we track movement of **people, goods**, and **money**

Monthly e-way bills average ~90 million through the year, with positive growth every month

Monthly number of e-way bills, FY2020-FY2024 (Dec '23)

Legend: e-way bills (LHS, million) — e-way bills growth (RHS, % yoy)

Values noted on chart: 95.3, 13.2

X-axis: Apr-19, Apr-20, Apr-21, Apr-22, Apr-23

Source: Thurro, Goods and Services Tax Network, NIIF Research
Note:
1. Includes all inter-state and intra-state e-way bills
2. e-way bill is a document required to be carried by a person in charge of the conveyance carrying any consignment of goods of value exceeding INR 50,000 under the Goods and Services Tax Act
3. Growth in a few months of 2020 and 2021 was volatile and hence not shown in the chart due to base effect

FasTag collection stabilised around ~INR 53 billion in CY2023, sharp uptick in December

Monthly national electronic road toll collection, FY2017-FY2024 (Dec '23)
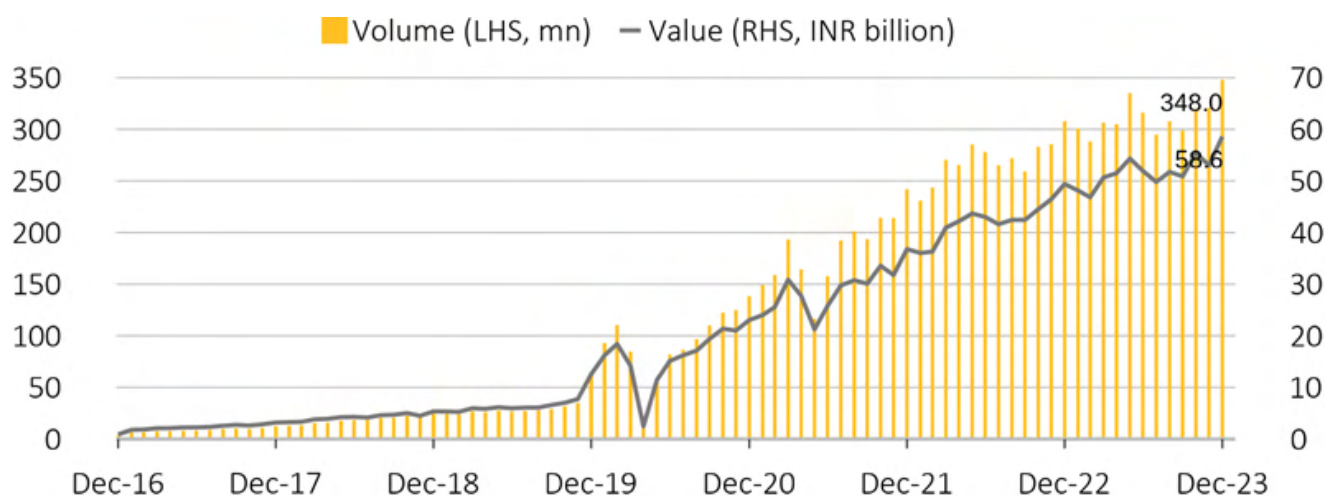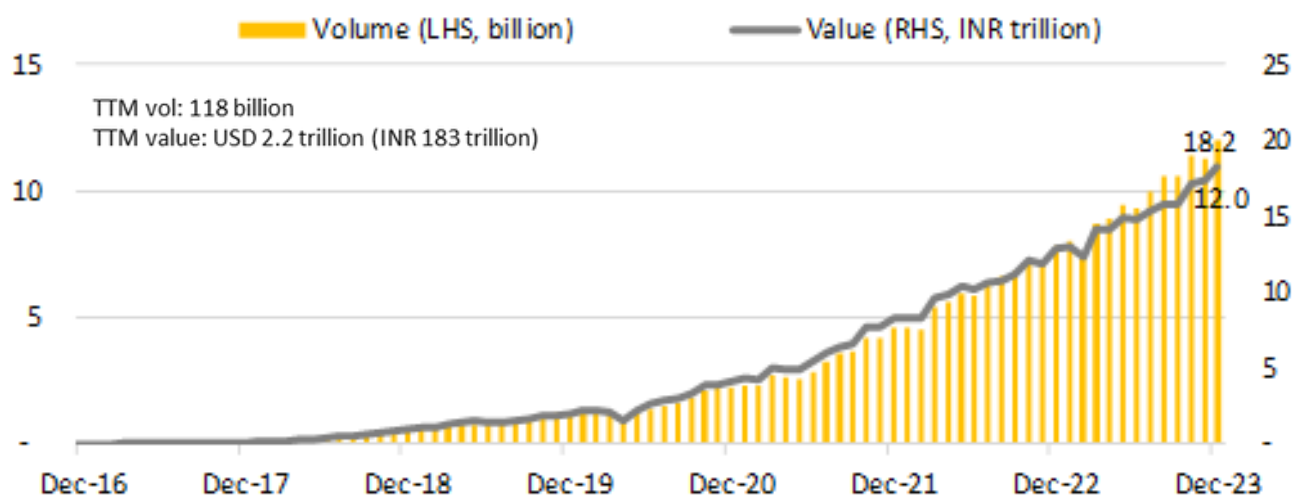

Source: Thurro, Reserve Bank of India, NIIF Research
Note: FasTag is primarily used at ~800 national and ~300 state highways, and at a few parking lots

UPI transaction value crosses USD 2 trillion in CY2023

Unified Payment Interface (UPI), monthly volumes and value, FY2017-FY2024 (Dec '23)

Source: Thurro, National Payments Corporation of India, NIIF Research
Note: TTM refers to trailing twelve months

Strong growth in **core commodities** that underpin the economy

After a brief flutter, electricity demand grew strongly through the year

Monthly electricity demand in India, FY2014-FY2024 (Dec '23)
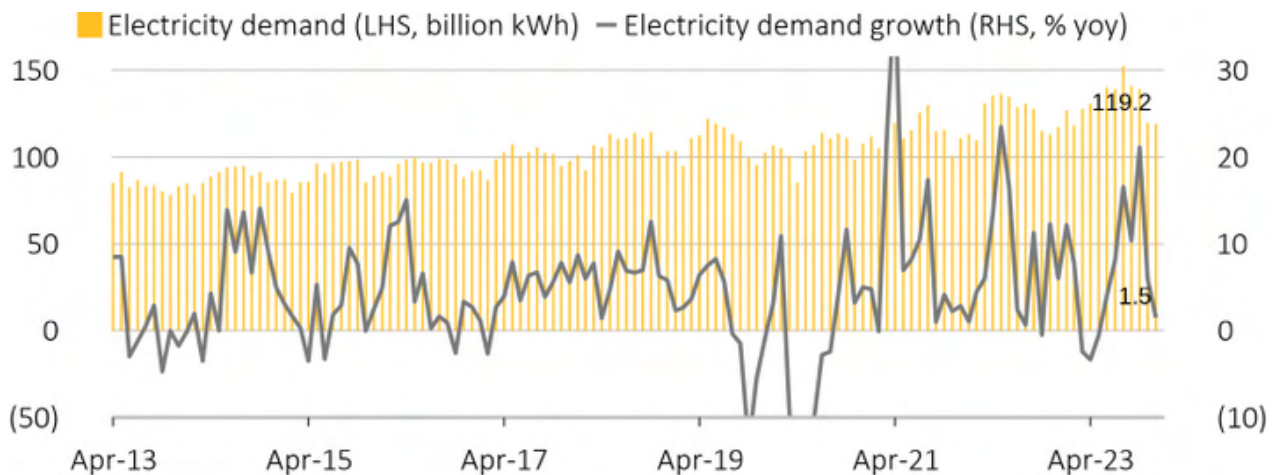
Source: Thurro, Power System Operation Corporation, NIIF Research
Note: The residual difference between units of electricity generated and demanded is auxiliary consumption to run the power plants

In the last 10 years, steel production has doubled, CY2023 saw sharp growth in output
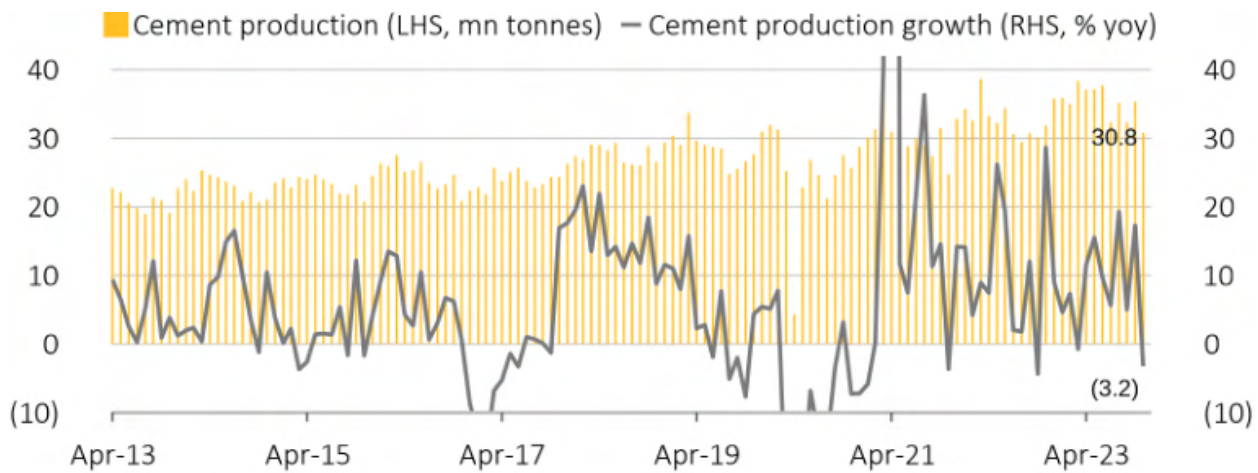Monthly crude steel production, FY2014-FY2024 (Nov '23)
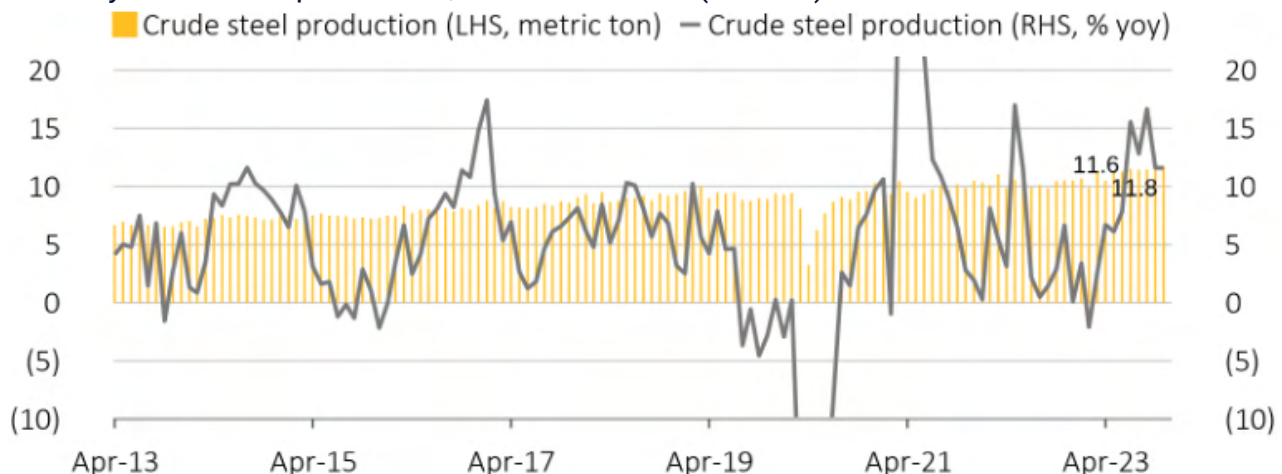
Source: Thurro, Ministry of Steel, Joint Plant Committee, NIIF Research
Note: Growth in a few months of 2020 and 2021 not shown in the chart due to base effect

Cement production growth has largely been strong over the years since Covid

Monthly cement production, FY2014-FY2024 (Nov '23)

Source: Thurro, Department for Promotion of Industry and Internal Trade, NIIF Research
Note: Growth in a few months of 2020 and 2021 not shown in the chart due to base effect

Growth in coal production maintained double-digit yoy growth all throughout the year

Monthly coal production, FY2014-FY2024 (Dec '23)
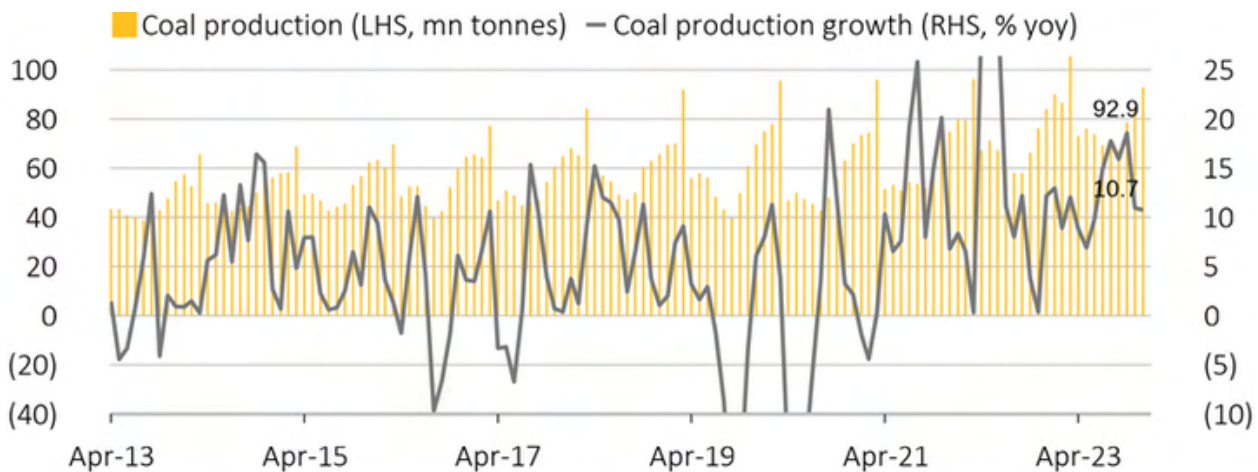
Source: Thurro, Ministry of Coal, NIIF Research
Note: Growth in a few months of 2020 and 2021 not shown in the chart due to base effect

High-frequency metrics across ten largest states are early markers of trends

A 'salad bowl' heatmap of the industries across states gives us insights into what might change for others

Change in economic indicators across top 10 states (% yoy), Dec '23

	Units	Maharashtra	Tamil Nadu	Karnataka	Gujarat	Uttar Pradesh	West Bengal	Rajasthan	Madhya Pradesh	Andhra Pradesh	Telangana
State GSDP (FY2022)	*INR tn*	*31.1*	*20.7*	*19.6*	*19.6*	*19.2*	*13.6*	*12.2*	*11.4*	*11.3*	*11.1*
Industry											
GST collections	% yoy	13.6	18.8	16.9	6.9	12.2	9.5	1.0	11.2	11.4	13.8
Electricity demand	% yoy	(3.2)	4.5	24.8	(1.0)	0.0	8.6	(2.9)	(10.4)	3.5	5.4
Automobiles											
2W registrations	% yoy	27.5	6.2	22.5	(19.9)	57.0	30.5	74.8	35.4	28.2	N.A.
2W EV registrations	% yoy	10.6	8.3	32.2	(48.4)	135.0	150.7	(7.6)	43.6	(13.2)	N.A.
4W registrations	% yoy	(4.0)	(9.9)	2.2	(6.2)	6.7	(1.6)	1.7	(13.4)	(4.6)	N.A.
4W EV registrations	% yoy	46.0	25.4	184.3	110.0	6,857.1	112.3	230.8	312.5	4.8	N.A.
Employment											
EPFO net additions[2]	% yoy	12.6	12.3	2.5	31.4	56.8	2.9	52.9	7.8	3.2	8.1
MNREGA (hh)	% yoy	56.9	(19.9)	(22.8)	17.7	(19.7)	N.A.	(42.4)	(10.6)	(3.9)	111.9
Naukri job postings	% yoy	(17.2)	(14.0)	(21.6)	(22.2)	(19.7)	1.0	(19.3)	(15.0)	(18.2)	(10.8)

Source: Thurro, Controller General of Accounts, Ministry of Finance, Ministry of Statistics and Program Implementation, Department for Promotion of Industry and Internal Trade, Power System Operation Corporation, NIIF Research

Note:
1. Gross State Domestic Product (GSDP) of the top 10 states in the matrix account for ~72% of India's GDP in FY2022
2. Data on EPFO net additions is for October 2023, for rest as of December 2023. Automobile registration data for Telangana, and MNREGA for West Bengal not available
3. (a) EPFO is Employees' Provident Fund Organisation; (b) EV refers to electric vehicles; (c) GST refers to Goods and Services Tax; (d) MNREGA is Mahatma Gandhi National Rural Employment Guarantee Act; and (e) MNREGA (hh) denoting the work demanded by households under MNREGA
4. State-wise indicators are published with a lag for most indicators and not available at all in some cases. More indicators can be added over time based on availability and insights

Volume growth in segments across income levels indicates areas of growth/stress

While such bundles are subjective, they offer a bird's eye view on the dynamics across income segments

Change in components of quarterly NIIF India Income-Consumption Index (% yoy), Mar '20 – Sep '23

			First Covid wave		Sep-20	Dec-20	Second Covid wave		Sep-21	Dec-21	Third Covid wave	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23
			Mar-20	Jun-20			Mar-21	Jun-21			Mar-22						
	Relatively higher income																
1	Marico (volume)	% yoy	(3.0)	(14.0)	11.0	15.0	25.0	21.0	8.0	0.0	1.0	(6.0)	3.0	4.0	5.0	3.0	3.0
2	Godrej consumer products (volume)	% yoy	(15.0)	3.0	5.0	7.0	29.0	15.0	4.0	0.0	(3.0)	(6.0)	(5.0)	3.0	11.0	10.0	10.0
3	Aviation domestic - pax	% yoy	(11.3)	(93.6)	(74.7)	(50.4)	(28.9)	375.9	107.9	61.1	6.2	200.4	63.0	9.2	50.8	18.7	21.9
4	Passenger vehicle sales (units)	% yoy	(99.9)	(79.7)	12.8	10.8	-	317.7	(2.1)	(20.2)	(6.1)	49.1	34.4	32.3	10.7	14.5	21.4
5	Eicher - Royal Enfield registration (units)	% yoy	(1.4)	(67.7)	(23.1)	(13.5)	2.8	86.2	(0.3)	(28.0)	(16.6)	47.4	30.4	80.5	36.4	36.4	16.7
6	Credit card transactions (value)	% yoy	11.8	(45.4)	(18.3)	(3.5)	9.5	84.1	59.5	49.1	42.3	85.1	50.8	29.9	37.1	25.7	24.2
	Relatively lower income																
7	Hindustan Unilever (volume)	% yoy	(7.0)	(8.0)	1.0	4.0	16.0	9.0	4.0	2.0	0.0	6.0	4.0	5.0	4.0	3.0	2.0
8	Dabur (volume)	% yoy	(14.6)	(9.7)	16.8	18.1	25.4	34.4	10.0	2.0	2.0	5.0	1.0	(3.0)	1.0	3.0	3.0
9	Railways - Sleeper class pax	% yoy	(19.9)	(115.0)	(85.0)	(52.9)	(6.2)	(405.7)	499.3	112.8	27.9	142.5	21.1	10.2	9.0	(6.3)	(3.2)
10	Tractor sales (units)	% yoy	(99.9)	(13.7)	41.4	26.8	-	38.9	(10.6)	(13.5)	(25.7)	15.8	4.8	36.3	18.7	(1.9)	(5.8)
11	Hero Motor registration (units)	% yoy	(99.9)	(66.9)	(18.1)	(13.3)	-	68.0	(6.9)	(15.7)	(14.5)	38.8	(13.4)	6.4	9.9	(1.7)	9.3
12	Bandhan Bank loans (value)	% yoy	68.1	68.1	22.6	26.7	22.5	7.2	1.6	4.6	15.1	21.6	21.1	14.7	11.5	8.0	13.1

Source: CEIC, Ambit Capital, Thurro, Livemint, Business Standard, Bandhan Bank, Centre for Monitoring Indian Economy, NIIF Research
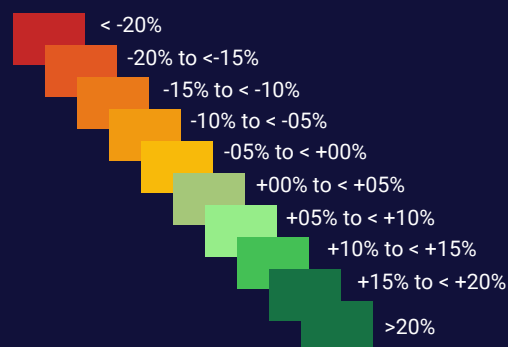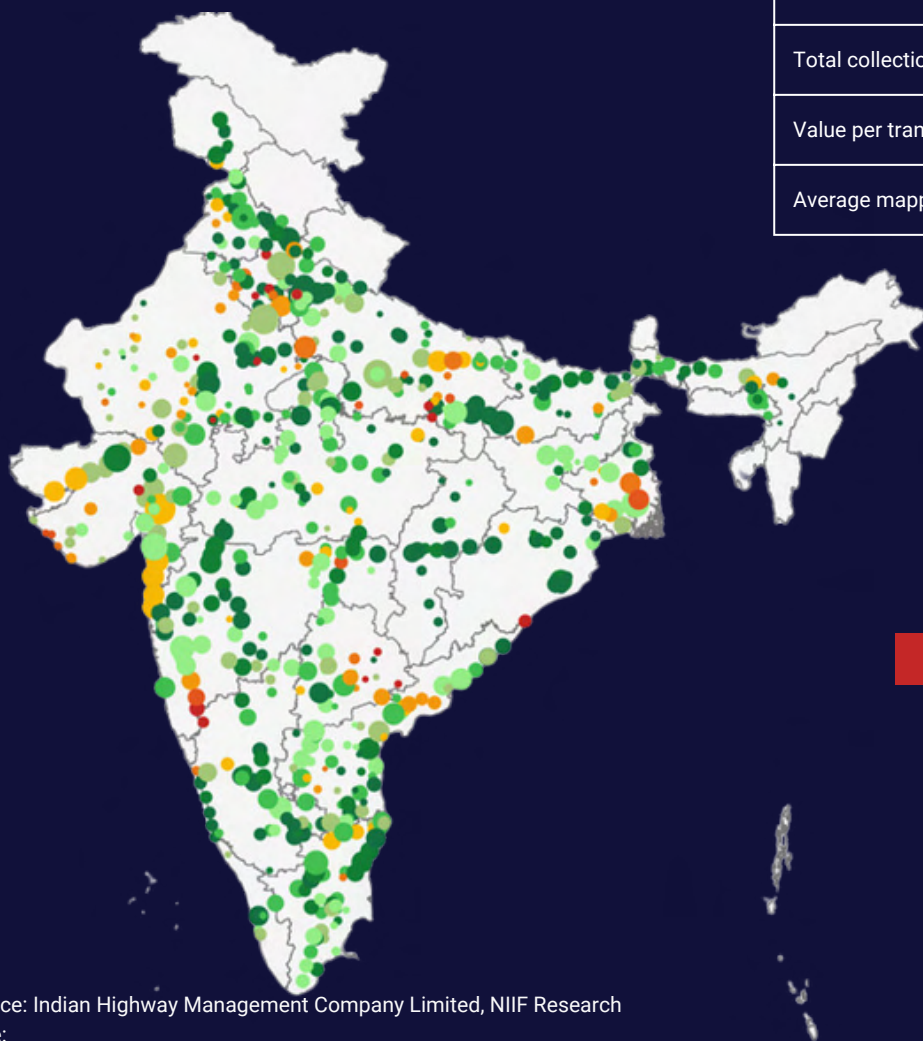
Note:
1. 'Relatively higher income' indicators are those which have been assumed to be associated largely with higher income. Similarly, for 'Relatively lower income' indicators. An internal classification, subject to review
2. Year-on-year (yoy) growth for 'Railways – sleeper class' across a few quarters is volatile due to Covid impacting travel
3. For domestic aviation passengers, tractor sales, and Hero Motor registration, yoy growth not shown for quarter-ended March 2021 because of low base effect in 2020

HeatMaps using toll data gives an overview of growth clusters across the country

The value of toll collections shows the trend of the spend on logistics

Growth in total IHMCL toll collections (% yoy), Jun '23

Total collections in all plazas	INR 43.5 bn
Total collections in plazas mapped:	INR 37.6 bn
Value per transaction:	INR 172.7
Average mapped toll growth	11.3% yoy

Legend:
- < -20%
- -20% to <-15%
- -15% to < -10%
- -10% to < -05%
- -05% to < +00%
- +00% to < +05%
- +05% to < +10%
- +10% to < +15%
- +15% to < +20%
- >20%

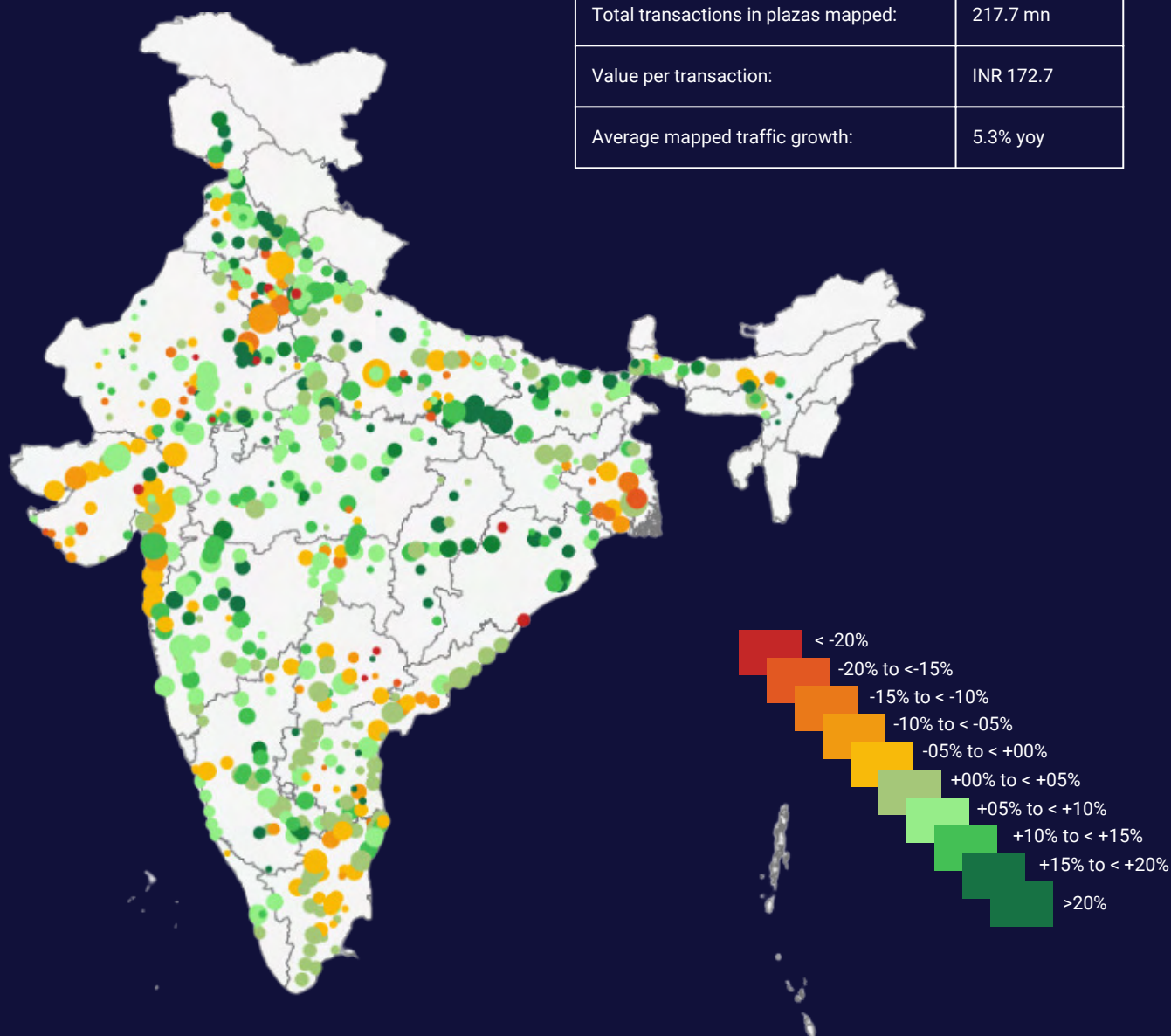Source: Indian Highway Management Company Limited, NIIF Research
Note:
1. 663 toll plazas mapped out of 857 published by IHMCL
2. Size of the dot reflects the relative amount of transaction as a proportion to the total

Volume numbers are not influenced by increased toll rates

Growth in total IHMCL toll traffic (% yoy), Jun '23

Total transactions in all plazas:	255.5 mn
Total transactions in plazas mapped:	217.7 mn
Value per transaction:	INR 172.7
Average mapped traffic growth:	5.3% yoy

Legend:
- < -20%
- -20% to <-15%
- -15% to < -10%
- -10% to < -05%
- -05% to < +00%
- +00% to < +05%
- +05% to < +10%
- +10% to < +15%
- +15% to < +20%
- >20%

HeatMaps for tolls visualise year-on-year growth in toll traffic (volume) and collection (value) across ~658 NHAI toll plazas in any given month

Source: Indian Highway Management Company Limited, NIIF Research
Note:
1. 663 toll plazas mapped out of 857 published by IHMCL
2. Size of the dot reflects the relative amount of transaction as a proportion to the total
3. The data disclosures have now not taken place over the last few months

We track **employment metrics** closely as they underpin our long-term forecasts for growth

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Diverging trends in labor force between the two main employment surveys

India's labor force by PLFS (all-ages) - Current Weekly Status and CMIE (both in millions), 2017-18 to 2022-23
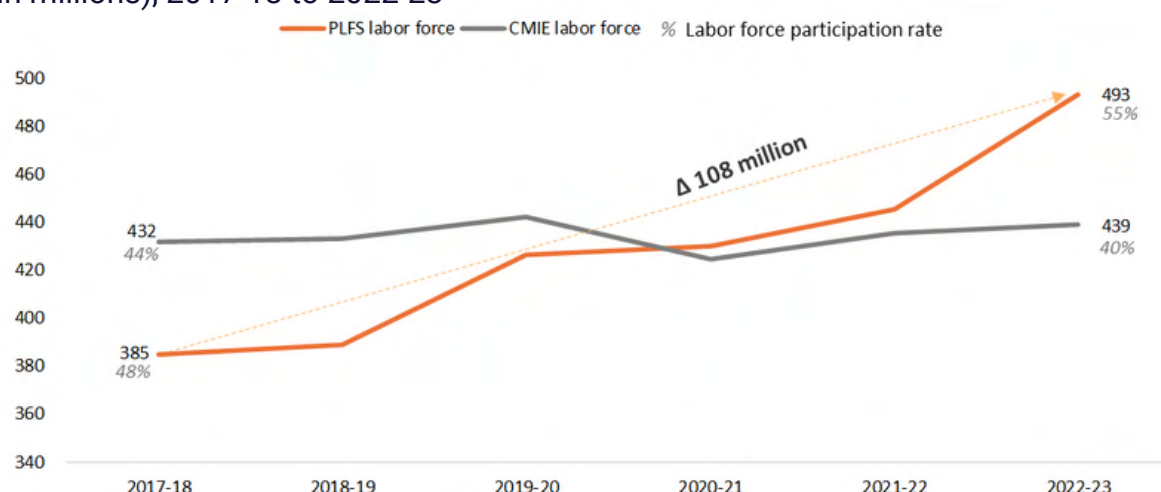
Source: Periodic Labor Force Surveys (PLFS), Centre for Monitoring Indian Economy (CMIE), NIIF Research

Note:
1. PLFS provides only ratio estimates. Absolute numbers are calculated by us based on an estimate of the population derived from the number of households and average household size provided by PLFS
2. A key difference between CMIE and PLFS is also the assumption on base population. Based on our calculation above, PLFS estimated *total* population base is of 1.23 billion in 2022-23. CMIE numbers are based on a working age population (>=15 years of age) of 1.1 billion

The difference in labor force estimates of PLFS and CMIE may be partly explained by the difference in methodology.

A person is classified in labor force if they are employed or willing to work and actively looking for a job:

1. **PLFS**: for at least 1 hour on any day during the 7 days preceding the date of survey
2. **CMIE**: on the date of survey, or previous day in cases when survey is conducted in the morning

The most well-behaved factor was "R": Rates

Rates determine the present value of future cashflows

What we tracked in India's interest rates

#	Key Insight from our research in 2023	Metric
1	India launched sovereign green bonds of INR 160 billion in CY2023 opening a new avenue for fund raising and investment; no green premium observed	GREEN BONDS
2	Foreign portfolio investors remain invested in Indian markets. Net foreign direct investments into India slowed in CY2023	INVESTMENTS
3	Government focuses on capital expenditure. Strong direct tax collection growth in FYTD2024 creates fiscal space	FISCAL SPACE
4	Spread between India and US 10-year G-sec yields recorded a 17-year low in October 2023 as US yields rose sharply. Indian yields have been stable	YIELDS

Sovereign green bonds (SGBs) launched – **no green premium**, unfortunately

No green premium – 10-y SGBs & 5-y SGBs trade at same yield as sovereign
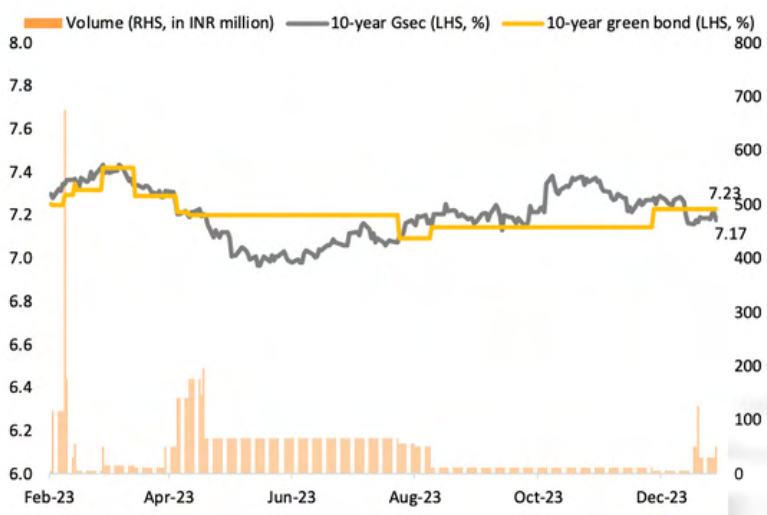
10-year G-sec and green bond yields (%), 02 Feb 2023 to 29 Dec 2023

Source: Bloomberg, NIIF Research

5-year G-sec and green bond yields (%), 02 Feb 2023 to 29 Dec 2023

Source: Bloomberg, NIIF Research

Foreign investors show faith in Indian markets – both Dalal Street and Main Street

India continues to be an attractive investment destination for foreign portfolio investors (FPIs)


Legend: Net Equity — Net Debt — Net Others — Net FPI

845.4
1.0
183.0
661.3
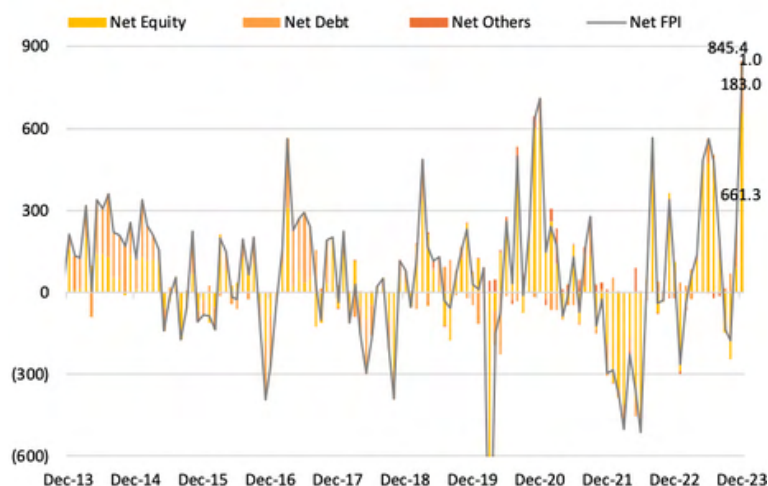
Monthly net FPI investments in India (INR billion), FY2014-FY2024 (Dec '23)

Source: CEIC, NIIF Research

However, net foreign direct investments (FDI) fluctuated sharply in 2023

Monthly foreign direct investments (USD billion), FY2014-FY2024 (Oct '23)

Note: Others comprise of debt-VRR and hybrid investments. Hybrid include investments in InvITs and REITs. Debt-VRR (voluntary retention route) allows FPIs to participate in repo transactions and also invest in exchange traded funds that invest in debt instruments.

Legend: Direct investments to India — Direct investments by India — Net FDI inflows into India

7.3
5.9
(1.4)
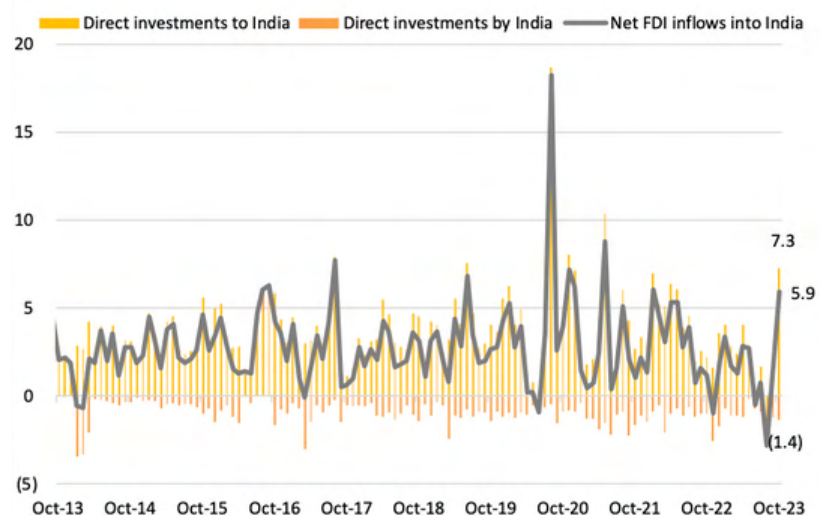
Source: CEIC, NIIF Research

We track government accounts closely – higher tax revenues support capex push

Strong direct tax collection growth in FYTD2024 creates fiscal space for the government

Monthly snapshot of central government fiscal health (INR trillion), FY2023-FY2024 (Nov '23)

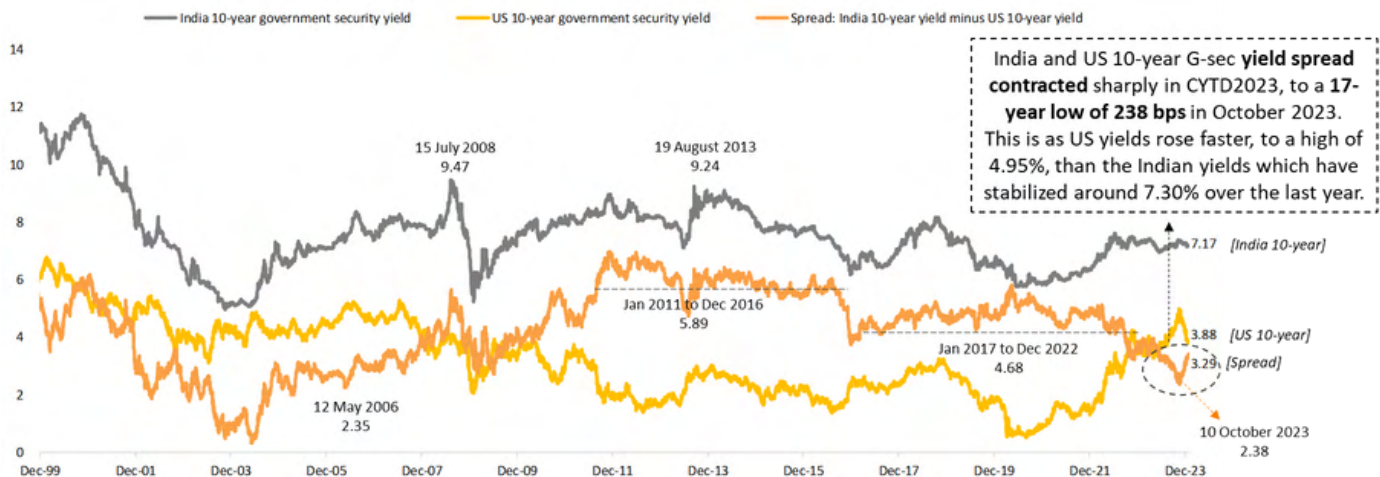|		FY2023		FY2024		% of BE		% yoy
		November	YTD	November	YTD	YTD FY2023	YTD FY2024	Δ YTD
1	Revenue receipts	0.7	14.2	1.5	17.2	64.6	65.3	20.9
1.1	Gross tax revenue	1.7	17.8	2.1	20.4	64.6	60.8	14.7
1.1.1	Direct tax	0.6	8.7	0.8	10.8	61.0	59.3	24.8
1.1.2	Indirect tax	1.1	9.1	1.3	9.6	68.7	62.8	5.1
2	Capital receipts (non-debt)	0.1	0.4	0.0	0.3	52.3	30.3	(38.6)
2.1	Net recovery of loans and advances	0.0	0.1	0.0	0.2	91.3	72.2	27.2
2.2	Miscellaneous receipts	0.0	0.3	0.0	0.1	43.7	14.5	(68.8)
3	**Total (non-debt) receipts (1 + 2)**	0.8	14.6	1.5	17.5	64.1	64.3	19.2
4	Revenue expenditure	2.6	20.0	2.2	20.7	62.5	59.0	3.6
4.1	Interest payment	0.6	5.5	0.6	6.1	58.0	56.3	11.5
5	Capital expenditure	0.4	4.5	0.4	5.9	59.6	58.5	31.0
6	**Total expenditure (4 + 5)**	3.0	24.4	2.6	26.5	61.9	58.9	8.6
7	Revenue deficit (4 - 1)	1.9	5.7	0.7	3.5	57.8	39.8	(39.5)
8	**Fiscal deficit (6 - 3)**	2.2	9.8	1.0	9.1	58.9	50.7	(7.3)
9	**Nominal Gross Domestic Product (GDP) - annual**	272.4		301.8				

Source: CEIC, NIIF Research
Note:
1. FY2023 is defined as the period between April 2022 and March 2023. Similarly, for FY2024
2. YTD refers to financial year to date, i.e., from April onwards
3. BE is the budget estimate for the stated financial year
4. Nominal GDP for FY2024 of INR 301.8 trillion is estimated by the Government in the Union Budget FY2024

India-US yield spread
at multi-decadal lows driven by better inflation management in India

Inflation differential reversion also reflecting in India-US yield spread reversion

Daily 10-year government security yields in India and US (%), FY2000-FY2024 (29 Dec 2023)

India and US 10-year G-sec **yield spread contracted** sharply in CYTD2023, to a **17-year low of 238 bps** in October 2023. This is as US yields rose faster, to a high of 4.95%, than the Indian yields which have stabilized around 7.30% over the last year.

Source: Bloomberg, NIIF Research

The global challenge was **"I" for Inflation**

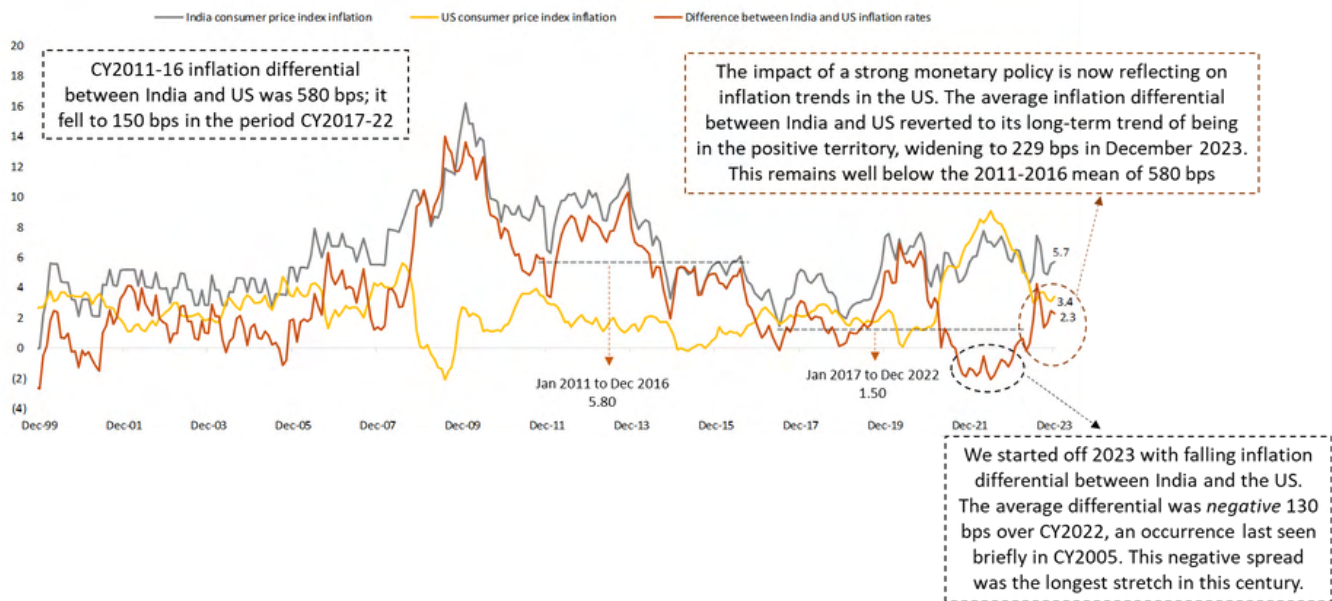Inflation is the silent force that influences real returns on investments

How we tracked India's inflation, monetary policies, and monsoon

#	Key Insight from our research in 2023	Metric
1	Narrowing of inflation differential between US and India reflecting in the fall in interest rate differential. Inflation in India within target range, moderating in the US	INFLATION MANAGEMENT
2	Monetary policy transitioned from being uncertain on (1) trajectory of interest rates (U.S. Fed members continuously revised their forecasts upwards) to (2) timing of lowering them	UNCERTAIN T^2
3	We analyse RBI's monetary policy over the last 20 years. Transmission of 250 bps repo rate hike yet to be completely transmitted via the banking system	MONETARY TRANSMISSION
4	We look at trends in monsoon arrival to assess impact on inflation. Despite a delay in onset, monsoon was 'normal' amidst an El Nino event in 2023	MONSOON

Low interest rate differentials due to better **inflation management** in India

Inflation within target range in India; differential with US reverting to its long-term mean

Monthly consumer price index inflation in India and US (%), FY2000-FY2024 (Dec '23)

— India consumer price index inflation   — US consumer price index inflation   — Difference between India and US inflation rates

CY2011-16 inflation differential between India and US was 580 bps; it fell to 150 bps in the period CY2017-22

The impact of a strong monetary policy is now reflecting on inflation trends in the US. The average inflation differential between India and US reverted to its long-term trend of being in the positive territory, widening to 229 bps in December 2023. This remains well below the 2011-2016 mean of 580 bps

Jan 2011 to Dec 2016
5.80

Jan 2017 to Dec 2022
1.50

We started off 2023 with falling inflation differential between India and the US. The average differential was *negative* 130 bps over CY2022, an occurrence last seen briefly in CY2005. This negative spread was the longest stretch in this century.
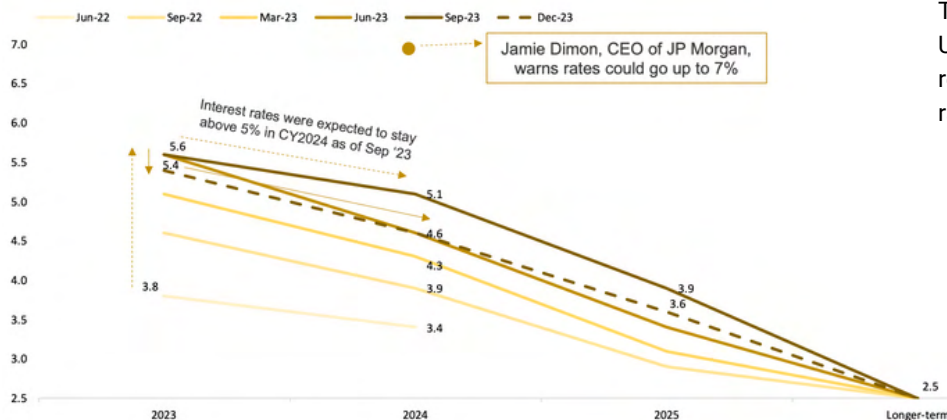
Source: Bloomberg, NIIF Research

Note:
1. Consumer inflation shown prior to 2012 is CPI Industrial Workers with 2001 as the base year
2. 2012 is the base for inflation 2012 onwards
3. Indian inflation (1.5%) was lower than inflation in US (1.6%) for one month in June 2017. Since it is only for one month, the same has not been considered in the analysis

We looked to **central banks** for guidance – though they have been uncertain themselves

US interest rate projections by the Federal Reserve members continuously revised through the year

US Federal Open Market Committee (FOMC) interest rate projections at various monetary policy meetings, June 2022 to Dec 2023

Source: Bloomberg, NIIF Research

Note: The projections for the federal funds rate are the value of the midpoint of the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run

The rate hike cycle is likely complete in the US. Central bank rates are expected to remain higher even with a projected 75 bps rate cut (as of Dec 2023) in CY2024.

- Between June 2022 and June 2023, projections by US Federal Reserve members were continuously revised upwards –from 3.8% to 5.6% for CY2023, and, from 3.4% to 5.1% for CY2024
- Until September 2023, US projected interest rates to remain above 5% in CY2024
- In December, projections were revised down to 4.6% - still high compared to the long-term target of 2.5%

We are now in a world which is uncertain on the: (1) trajectory of interest rates, i.e., how high the rates will go, and (2) timing of lowering them, or for how long will rates remain high. The uncertain trajectory and timing lead us to the call this period *Uncertain T^2 (or, uncertain T-square)*. We are conscious that this also refers to the place the world is now in: Uncertainty Square!

Rate hike cycle has become shorter while rate cut cycle is getting stretched

Our analysis of RBI's policy over the last 20-years indicate that a pause in a rate cycle lasts between 3 and 14 months

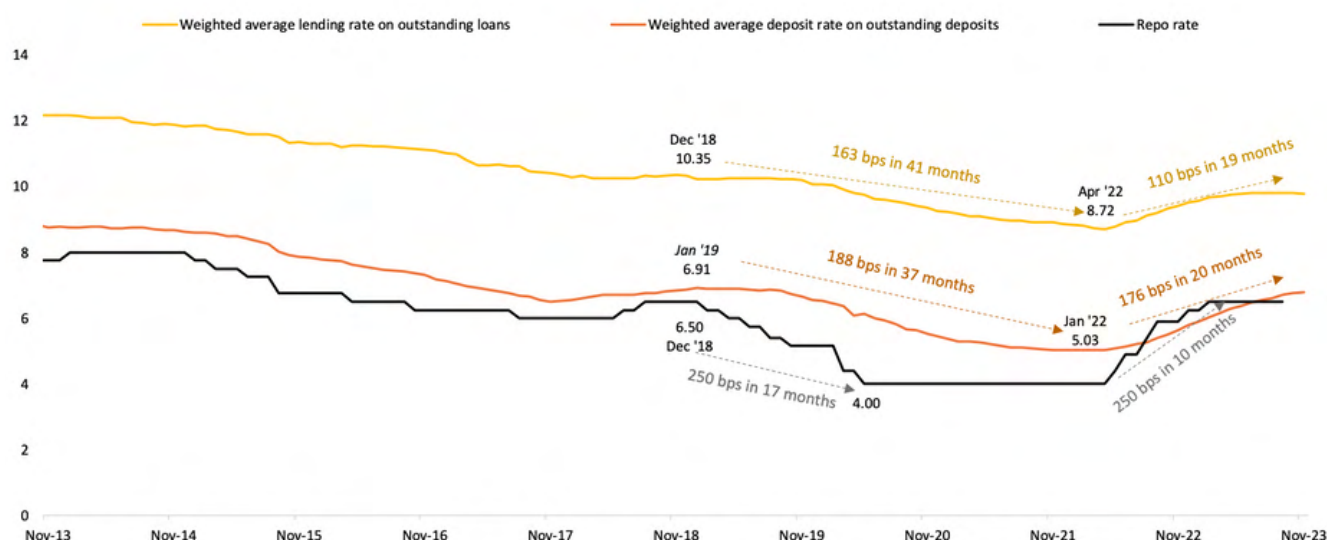20-year monthly trend in repo rate, FY2004-FY2024 (%) (Dec '23)
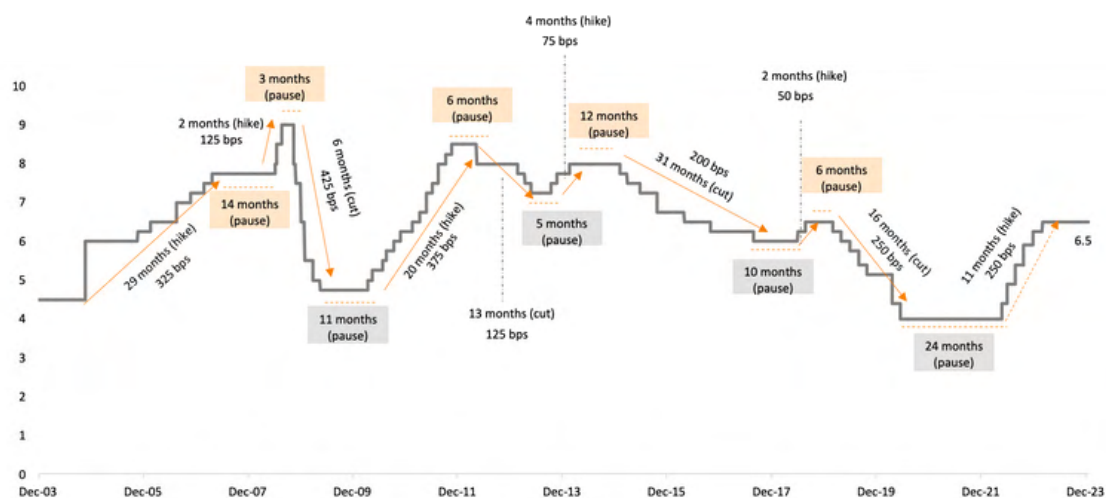
Source: Bloomberg, NIIF Research

Note: Periods when rates are held after a hike cycle are marked in orange, and after a cut cycle in grey boxes.

Monetary policy lags are "uncertain and variable"

Transmission of hike in repo rates not yet completely transmitted via the banking system

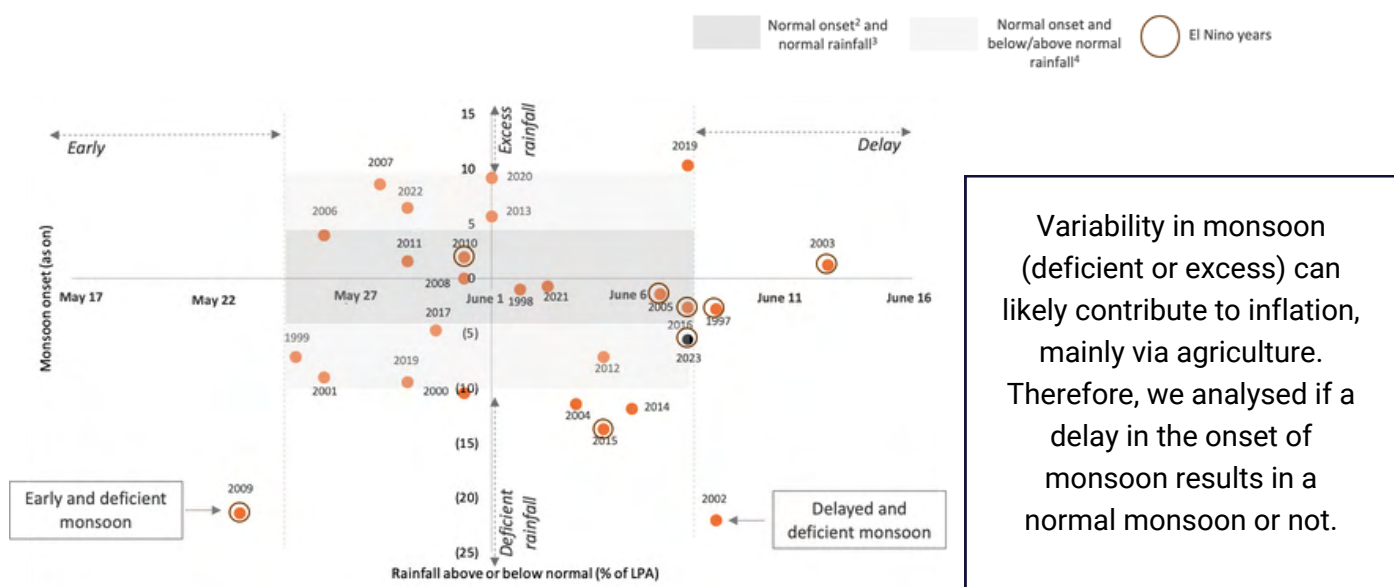Monthly weighted average lending and deposit rates of scheduled commercial banks (%), FY2014-FY2024 (Nov '23)

— Weighted average lending rate on outstanding loans   — Weighted average deposit rate on outstanding deposits   — Repo rate

Dec '18 10.35 · 163 bps in 41 months · Apr '22 8.72 · 110 bps in 19 months

Jan '19 6.91 · 188 bps in 37 months · Jan '22 5.03 · 176 bps in 20 months

6.50 Dec '18 · 250 bps in 17 months · 4.00 · 250 bps in 10 months

Source: Bloomberg, CEIC, NIIF Research

Late monsoon has a higher chance of being deficient – India was lucky in CY2023

Even though the monsoon was delayed by a week, overall it turned out to be normal

Onset of monsoon in India and rainfall departure from normal, CY1997-CY2023

Variability in monsoon (deficient or excess) can likely contribute to inflation, mainly via agriculture. Therefore, we analysed if a delay in the onset of monsoon results in a normal monsoon or not.

Source: India Meteorological Department, CMIE, NIIF Research

Note:
1. Dots represent years
2. IMD estimates the 'normal' date of onset of monsoon season in India at Kerala on June 1, with a standard deviation of +/- 7 days
3. IMD defines 'normal' rainfall as within 4% deviation from long-period average (LPA), i.e., between 96% and 104% of LPA
4. Below normal rainfall is between 5-10% departure from LPA, i.e., between 90-95% of LPA, and above normal rainfall is between 105-110% of LPA
5. Deficient rainfall is defined as departure greater than or equal to -10% from 'normal'.
6. Similarly, excess rainfall is departure equal to or above 10% of LPA

The "X" factor is Exchange Rates

Exchange rate fluctuations steer global investment attractiveness

How we track India's INR story

#	Key Insight from our research in 2023	Metric
1	Rupee has been a stable currency over the last year. IMF makes a remarkable change in its forecasts estimating a lower depreciation over next five years. Rupee strength also reflected in the 1-year forward premium of USD/INR which is at a multi-year low	EXCHANGE RATE
2	India now accounts for greater share of world services trade driven by ~12% p.a. USD growth in services exports between Sep 2019 and Sep 2023. India's goods trade deficit is significantly offset by services trade surplus	EXPANDING TRADE
3	Indian equity indices outperform global indices, even in USD, through the years	DELIVERED RETURNS

IMF forecasts have made a remarkable change in **USD-INR estimates**

IMF's forecast indicate lower depreciation of INR vis-à-vis USD over time
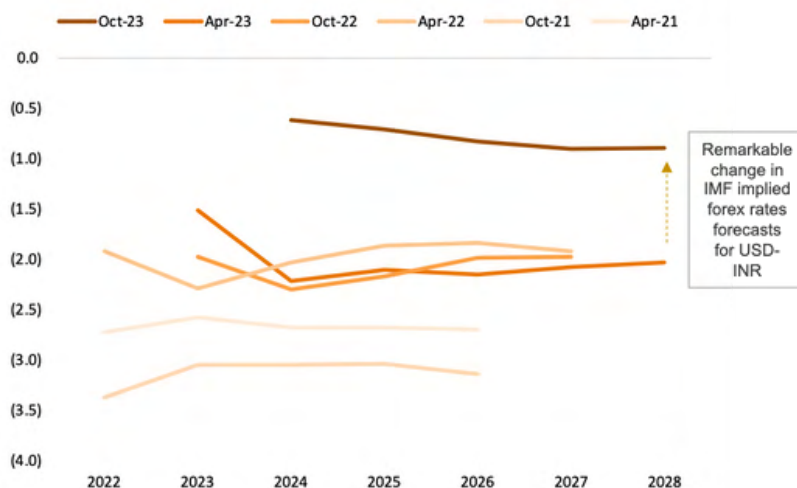
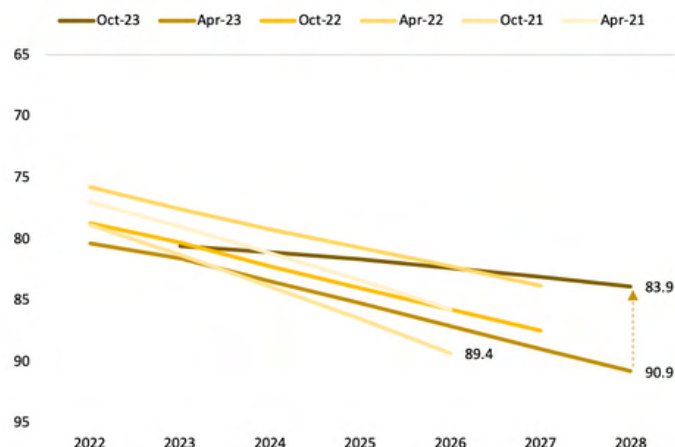**Change in USD-INR based on IMF forecasts (% yoy), FY2023-FY2029 (Oct '23)**

Source: International Monetary Fund's World Economic Outlook (various editions), NIIF Research

Note:

1. IMF publishes forecasts for nominal GDP in USD and local currency (INR) for the next five years. Using this, we calculate the implied foreign exchange rate and further calculate the expected depreciation rate over the next five years

2. Data and forecasts are presented on a fiscal year basis (Apr-Mar) with FY2022-23 (starting in April 2022) shown under 2022. Similarly, for other years

USD-INR forecast based on IMF estimates (X), FY2023-FY2029 (Oct '23)

USD-INR pair estimated to be in a narrower range over next 5 years

Source: International Monetary Fund's World Economic Outlook (various editions), NIIF Research

Rupee strength also reflected in the **multi-year low USD/INR forward premium**

**Forward premium on USD remains at a multi-year low**

USD/INR implied 1-year forward risk premium (%), FY2004-FY2024 (29 Dec '23)

Source: Bloomberg, NIIF Research

Analysing India's trade in the global context helps understand **growth drivers**

Services exports offsetting goods trade deficit

Merchandize exports — **Merchandize imports** — **Goods trade balance** — **Services trade balance**
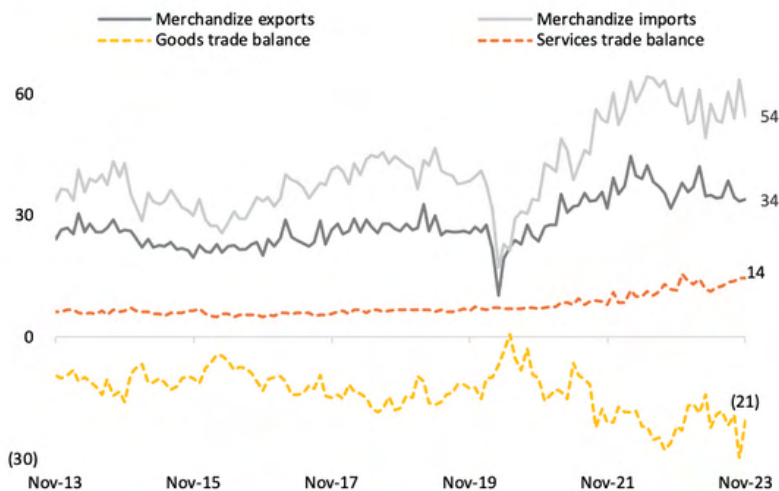
Monthly trade composition (USD billion), FY2014–FY2024 (Nov '23)

**Source:** CEIC, Ministry of Commerce and Industry, NIIF Research

India's share in global services trade sharply picks up, goods trade flat

— Services — Merchandize

India's share in world goods and services trade (% share of world), 2010 to 2022

Note:
* Other business includes R&D (2.1%), professional and management consulting (17.5%), and technical, trade related (5.8%), etc. Percentage share as of Oct-Dec '22
'Modern services' include financial, communication, computer, technical, legal, advertising and business services.
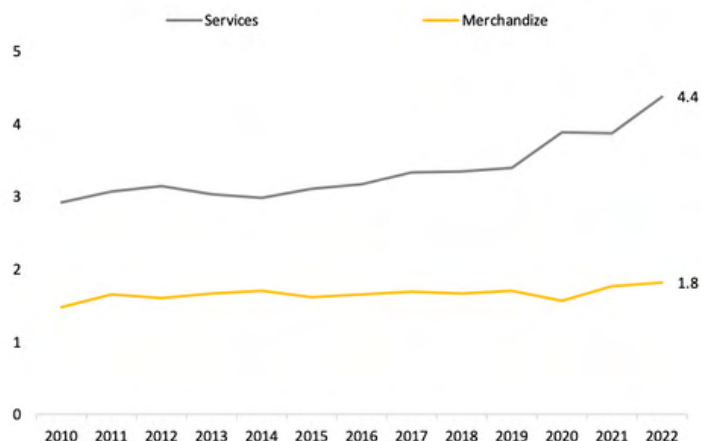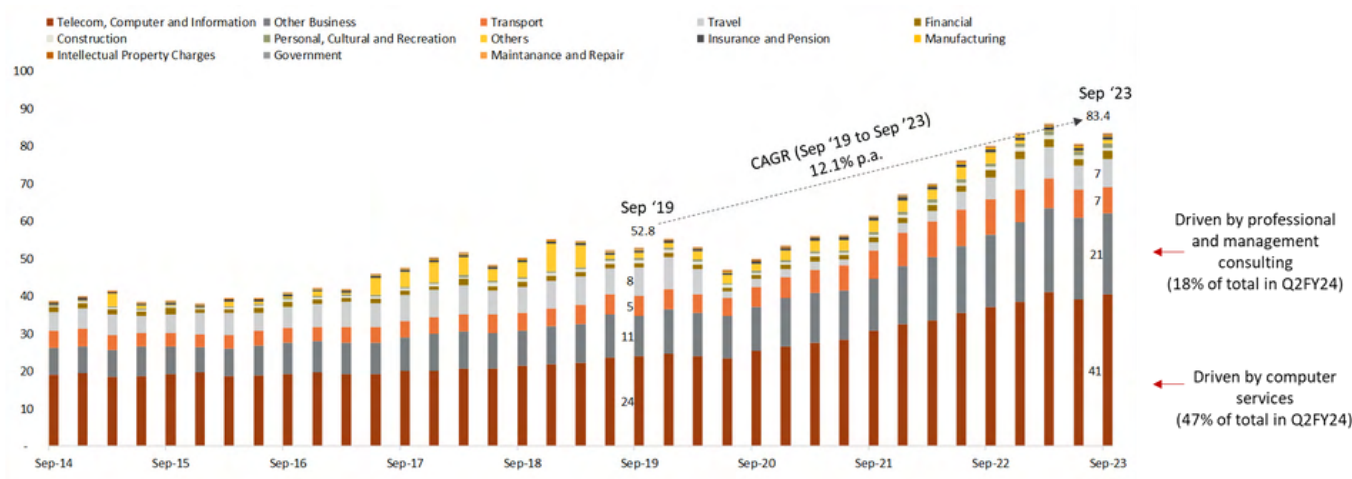
Source: World Trade Organization, NIIF Research

India is now emerging as the "service capital of the world"

Services exports grew by ~12% p.a. USD between Sep 2019 and Sep 2023 largely by IT and consulting services

Quarterly composition of services exports in India (USD billion), Sep '14 to Sep '23

Source: CEIC, Ministry of Commerce and Industry, NIIF Research

Note:
1. Other business includes (share as of Q2FY24) research and development (2.2%), professional and management consulting (17.9%), and technical, trade related (5.6%), etc.

Delivered returns on **Indian equity**, even in USD, outperformed peers through the years

Indian equity markets generate strong returns across time periods

Equity market returns in USD for benchmark indices across economies, FY2004-FY2024 (as on Dec 29, 2023)

	Returns - USD (% p.a.)									
	1W	1M	3M	6M	12M	3-Y	5-Y	10-Y	15-Y	20-Y
MSCI World	0.5	5.2	11.1	6.8	21.8	5.7	11.1	6.7	8.4	5.7
MSCI EM	3.2	3.9	7.4	3.5	7.0	(6.9)	1.2	0.2	3.8	4.3
Advanced economies										
Nasdaq (US)	0.1	5.1	13.6	8.9	43.4	5.3	17.9	13.6	15.9	10.6
Dow Jones (US)	0.8	6.4	12.5	9.5	13.7	7.5	10.3	8.6	10.0	6.6
S&P 500 (US)	0.3	4.7	11.2	7.2	24.2	8.6	13.9	9.9	11.5	7.6
FTSE 100 (UK)	0.9	4.3	6.3	3.1	9.5	3.5	2.9	(1.2)	2.7	1.1
S&P/ASX 200 (Australia)	1.6	11.2	14.3	8.0	8.1	0.6	5.4	0.8	4.7	3.8
S&P/TSX Composite (Canada)	0.8	7.5	10.0	4.2	10.8	5.1	8.8	2.2	5.0	4.7
Emerging economies										
Sensex (India)	1.5	9.3	9.6	10.0	18.0	10.2	11.0	9.8	10.1	10.0
Nifty (India)	1.7	9.4	10.5	11.6	19.3	11.2	10.9	9.9	10.0	9.6
MSCI China	4.8	(3.6)	(4.5)	(7.3)	(13.3)	(19.1)	(4.5)	(1.3)	1.8	4.0
IBOV (Brazil)	1.0	6.3	18.7	12.1	33.1	6.3	4.0	2.4	3.2	6.6
JCI (Indonesia)	1.1	3.5	5.4	6.0	7.0	3.4	2.1	3.1	9.3	9.2

Source: Bloomberg, NIIF Research

Note:
1. Returns over 12 months are annualised
2. The numbers above are returns from change in equity prices and do not include dividends, share buybacks, etc.

CY**2024**: what we will **watch out** for

- **Elections and global political changes**: 2024 is a year of elections both in India and the US, apart from 60+ other countries. Across the world, elections are expected to either herald a significant change in policies or cement consistency. Macroeconomic policies in India largely have bipartisan support - we expect stability in the growth momentum that India saw in 2023.

- **Geopolitics**: Over the last two years, we have learnt to look for the narrowest of straits and the smallest of warm-water ports that might suddenly turn strategic. Alliances are evolving as events unfold. These changes can create new channels for flows of capital and trade or build walls behind which countries can hide. The idea of creating prosperity through trade and capital flows may get tested.

- **China, China + 1**: The economic slowdown that started in China this year has had material implications, especially on commodities, for India. Investors too have found a new growth market in India to invest in. The 'China+1' strategies being discussed across boardrooms are expected to boost India's manufacturing output and intertwine it in global supply chains. We will watch this space to track everything from imports of nanometer semiconductors to large machinery exports from China.

- **Climate and El Nino**: With 2023 being the hottest year and El Nino expected in 2024, global warming records are generally expected to tumble again. What climate change does across industries and societies remains unpredictable in timing and fury. We have seen how sudden heatwaves shrivelled India's wheat output and inundated Pakistan - climate costs can come in the unlikeliest of places and times.

- **Global and local monetary policies:** Will we move from "higher for longer" interest rates globally to a calibrated reduction in the cost of money? Will climate, geopolitical, and political changes create reasons to bring back inflation or has it finally been tamed? Lower global cost of funds can help reignite growth and channel monies to emerging markets.

- **New public datasets**: India's rapid digitalisation is enabling new analyses & visualisations, such as our HeatMaps based on toll data. As the digital GatiShakti initiative takes hold and more datasets of Indian infrastructure become public, many new analyses can become possible across sectors like power, transport, cities.

- and yes, the **T20 World Cup**: After the heartbreak in Ahmedabad, will India lift the trophy in Bridgetown?

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For any feedback or queries, reach out to:

Akhilesh Tilotia
Head of Research
& Chief of Staff, NIIFL
akhilesh.tilotia@niifindia.in

Akshata Kalloor
Economist
NIIFL
akshata.kalloor@niifindia.in

Viraj Nair
Vice President,
Communications, NIIFL
viraj.nair@niifindia.in

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