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The New India

Why This Is India's Decade

India has the conditions in place for an economic boom fueled by offshoring, investment in manufacturing, the energy transition, and the country's advanced digital infrastructure. These drivers will make it the world's third-largest economy and stock market before the end of the decade, we estimate.

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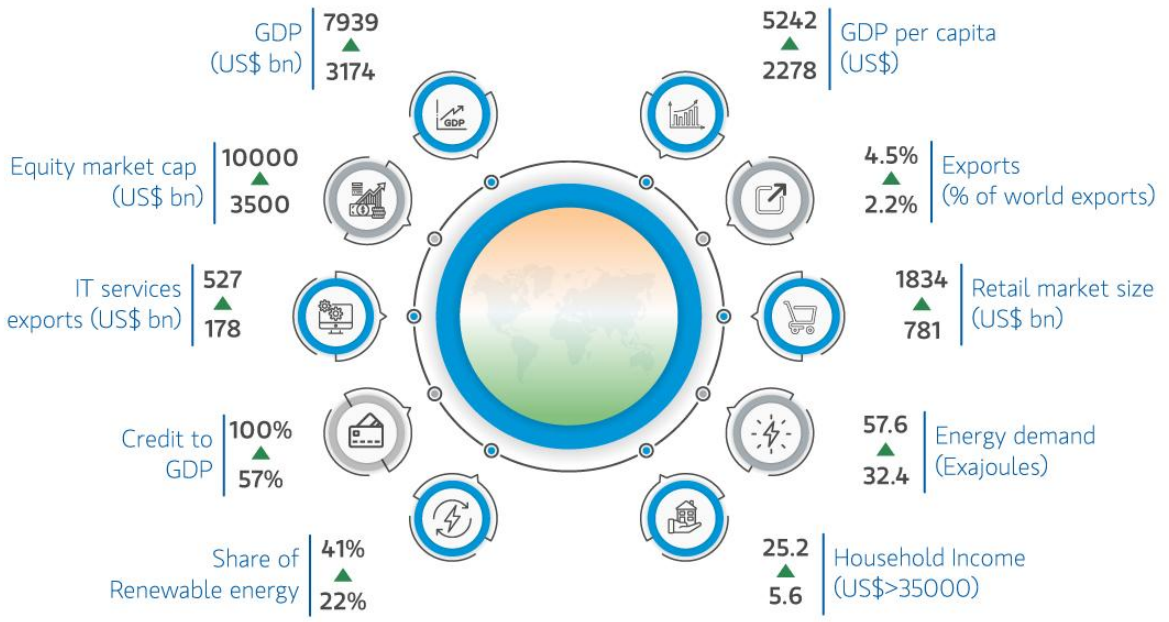
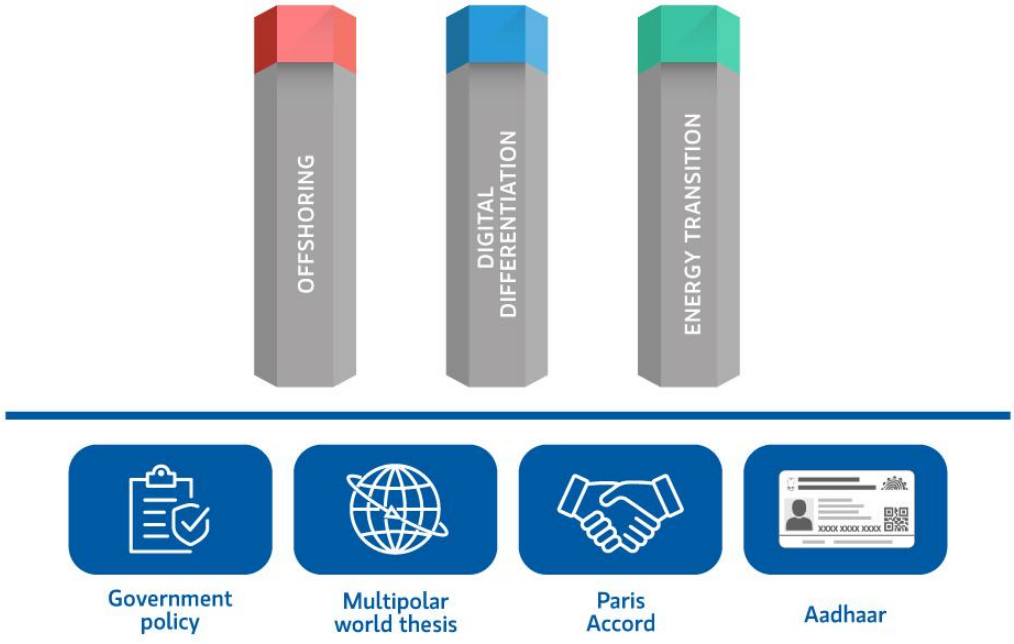
THE NEW INDIA WILL DRIVE A FIFTH OF GLOBAL GROWTH THROUGH THE END OF THIS DECADE





Message to CEOs and CIOs

Our Next India thematic looked at the trends and policies shaping the future of India's economy. As those trends have largely come to pass, with this report we shift from The Next India to The New India thematic to mark this transition. The four global trends of Demographics, Digitalization, Decarbonization and Deglobalization are favoring the New India.

We estimate The New India will drive a fifth of global growth through the end of this decade, led by:

- **Offshoring:** The pandemic only enhanced India's attractiveness as the office to the world. But new developments – such as the trends outlined in Morgan Stanley's multipolar world thesis, along with government incentives – are allowing India to gain traction as a factory to the world as well. Investment in services and manufacturing will come from foreign direct investment and a large increase in private domestic investment.
- **Digital differentiation:** India is pursuing a distinct model for the digitalization of its economy, supported by a public utility called IndiaStack. IndiaStack, which operates at population scale, is a transaction-led, low-cost, high-volume, small-ticket-size system with embedded lending. It will take India from a 'prepaid' economy to a 'postpaid' one. The digital revolution has already changed the way India handles documents, invests, and makes payments, and it is also set to alter the way India lends, spends and insures.
- **Energy transition:** While the first two drivers are unique to India, the world has seen energy transitions before. The difference for India is that both its energy consumption and energy sources are changing simultaneously in a disruptive fashion. Another difference is that India's energy needs are still growing, and therefore legacy capacity using fossil fuels will not be destroyed as it transitions to a higher share of renewables. India's per-capita energy consumption is likely to rise 60%, on our estimates, to about 1450 Watts per day in the coming decade, with two-thirds of the incremental supply coming from renewable sources. We believe this will 1) positively impact India's terms of trade, 2) entail about three-quarters of a trillion dollars in energy capex, 3) eventually reduce headline inflation volatility as the imported energy share of GDP declines, 4) lower fertilizer subsidies, 5) improve living conditions, and 6) create new demand for solutions such as electric vehicles, cold-storage chains, and green hydrogen-powered trucks and buses.

Supporting these factors are: 1) Our multipolar world thesis and India's rise in the world economy, 2) India's commitment to the Paris Accord, 3) major investments in terms of both dollars and institutional infrastructure to leverage India's biometric identity system, Aadhaar, and 4) government policies targeted at lifting the share of profits in GDP, with a concomitant positive effect on investment.

How growth will affect consumption: Consumer discretionary spending is gaining share in total consumption, as per-capita GDP has crossed the important US$2,000 mark. India's income pyramid offers unique breadth of consumption, in our view, with the top end spending like the richest in the world and the bottom end still relatively poor. The number of households earning in excess of US$35,000/year is likely to rise fivefold in the coming decade, to over 25 million. The implications are 1) GDP is likely to cross US$7.5 trillion by 2031, more than double the current level, 2) a discretionary consumption boom, and 3) 11% annual compounding of market capitalization to US$10trn in the coming decade.

Where we could be wrong: Key risks to our view include a prolonged global recession or sluggish growth, adverse geopolitical developments, domestic politics and policy errors, shortages of skilled labor, and steep rises in energy and commodity prices.

Why This Is India's Decade

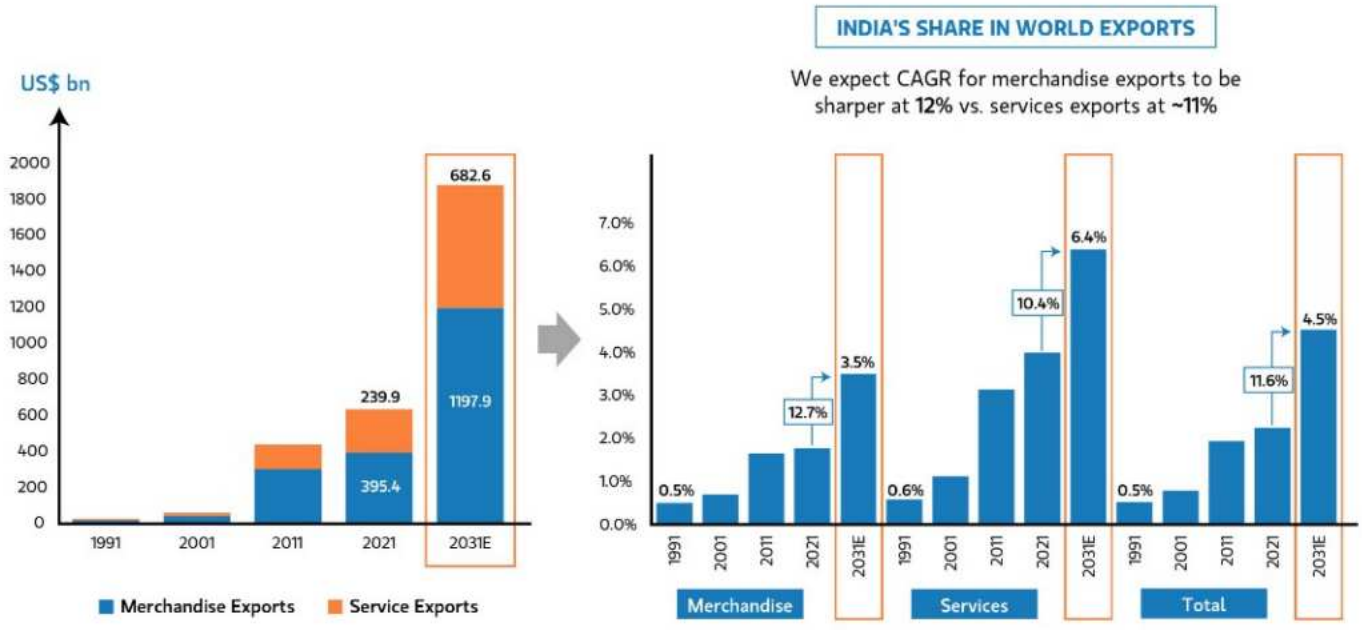
We believe India is set to become the world's third-largest economy and stock market by the end of this decade. As a consequence, India is gaining power in the world economy, and in our opinion these idiosyncratic changes imply a once-in-a-generation shift and an opportunity for investors and companies.

1. Offshoring: 'Work from India'

In the post-Covid environment, global CEOs appear more comfortable with both work from home and work from India. The emergence of distributed delivery models, along with tighter labor markets globally, has accelerated outsourcing to India. The number of global in-house captive centers that opened in India over the last two years was almost double that of the prior four years. During the two pandemic years, the number of people employed in this industry in India rose from 4.3 million to 5.1mn, and the country's share of global services trade rose 60bps to 4.3%. In the coming decade, the number of people employed in India for jobs outside the country is likely to at least double to over 11mn, and we estimate global spending on outsourcing could rise from US$180bn per year to around US$500bn by 2030. This will have significant effects on both commercial and residential real estate demand.

If India is already the 'office to the world', it is increasingly becoming its factory as well. We anticipate a wave of manufacturing capex owing to government policies aimed at lifting corporate profits' share of GDP via tax cuts and hard dollars for investing in specific sectors, and we note that performance-linked incentive (PLI) schemes now total US$33bn across 14 sectors. Multinationals are more optimistic than ever about investing in India, as the all-time high on our MNC Sentiment Index shows (Exhibit 37), and the government is encouraging investment by both building infrastructure and supplying land for factories. The trends outlined in Morgan Stanley's multipolar world thesis and cheap labor add to the mix. We estimate that manufacturing's share of GDP will rise from 15.6% currently to 21% by 2031, which implies nominal output jumping from US$447bn to about US$1.49trn.

Exhibit 1: The office – and factory – to the world: India's export market share to increase to 4.5% by 2031



Source: WTO, Morgan Stanley Research (E) estimates

2. Digital differentiation: IndiaStack – Digital transformation at population scale

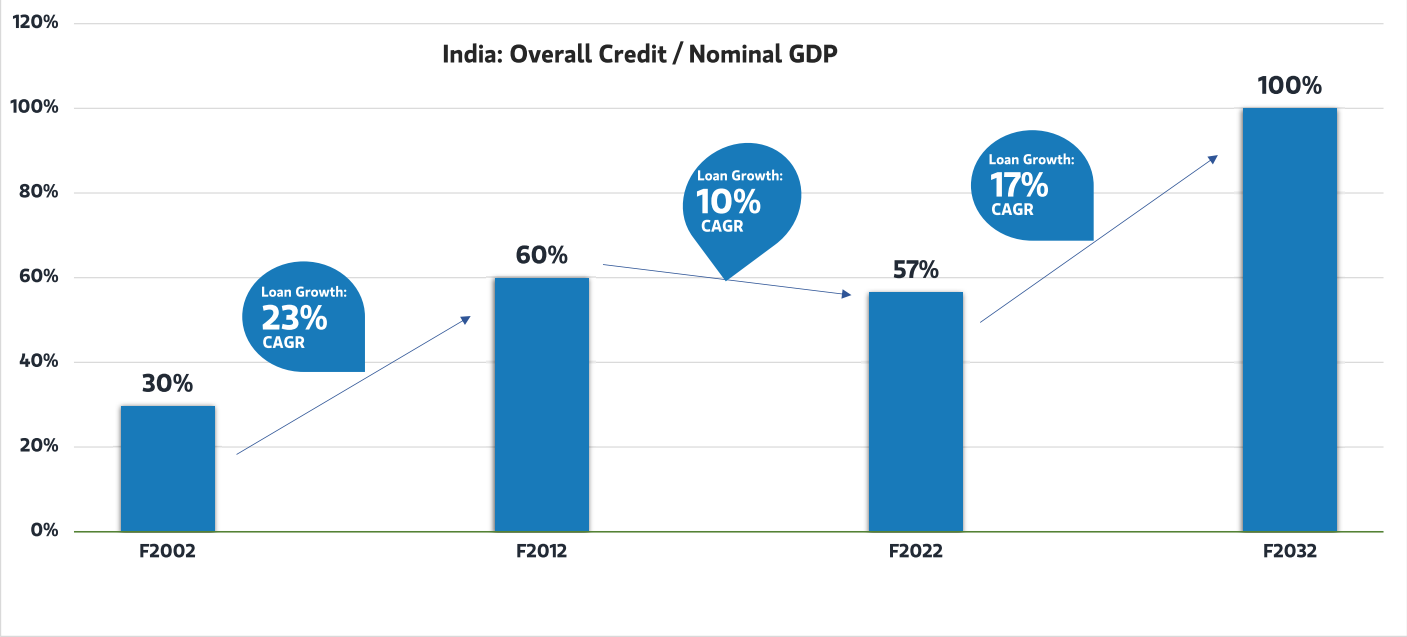
The world has seen four different internet models: the US model, which is laissez-faire and built on advertising revenue; the Chinese model, which sits behind a firewall and has created domestic behemoths like Alibaba and Tencent; the more regulation-oriented European version; and IndiaStack, which is India's highly inclusive, transaction-led model. Loosely put, IndiaStack is India's version of web3. Of course there are many differences, but one that stands in favor of the IndiaStack is that it is a public utility. Unlike private solutions, the IndiaStack provides interoperability, democratizes data, and is decentralized.

The stack has three main layers: eKYC (biometric-based KYC), Digilocker (cloud document storage), and eSign (digital signing of documents), as well as multiple payment layers including UPI (unified payments interface), the Aadhaar-enabled payment system, or AEPS (which facilitates direct benefit transfers and other payments), the Bharat Bill Payment System, or BBPS (for payment of bills), GST (goods and services tax), Fastag (highway tolls), and income tax. This has changed the way India processes documents (especially official ones), invests, and makes payments.

The stack adds three significant layers that will alter the way India lends, spends and insures. The first, OCEN (open credit enablement network), is disruptive to the incumbent banks but will simultaneously raise credit penetration by transitioning the system to cash flow-based lending. It also has the potential to lower credit costs due to enhanced data access from multiple systems. This will democratize credit at a population scale for both consumers and businesses.

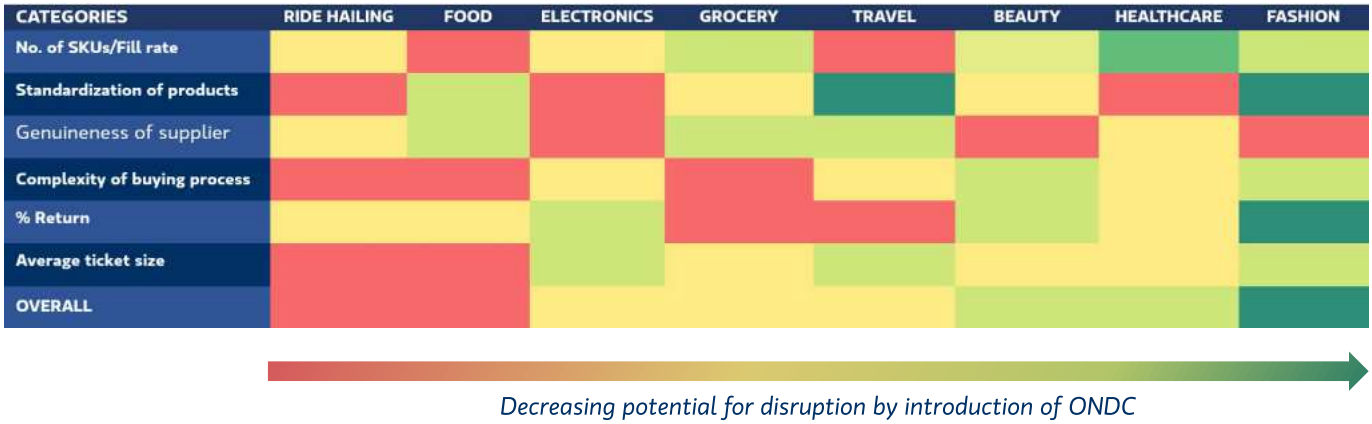
The second, ONDC (open network digital commerce), will aid the onboarding of merchants across the country and give consumers access to products hitherto available at higher cost. This is a major disruption to the consumer sector, with the moats around brands and distribution likely to come under threat. E-commerce is gaining share in overall retail. Products are moving from unbranded to branded and small traders are modernizing as OCEN enables credit at scale. ONDC enables interoperations between buyers and sellers. ONDC will have a disruptive impact on the existing business models of platforms – ride-hailing, electronics and food delivery are more prone to this while healthcare, travel, beauty, and fashion are less prone.

Exhibit 2: Revival in capex cycle and strong digital architecture (in particular AA/OCEN) should drive a boom in credit creation



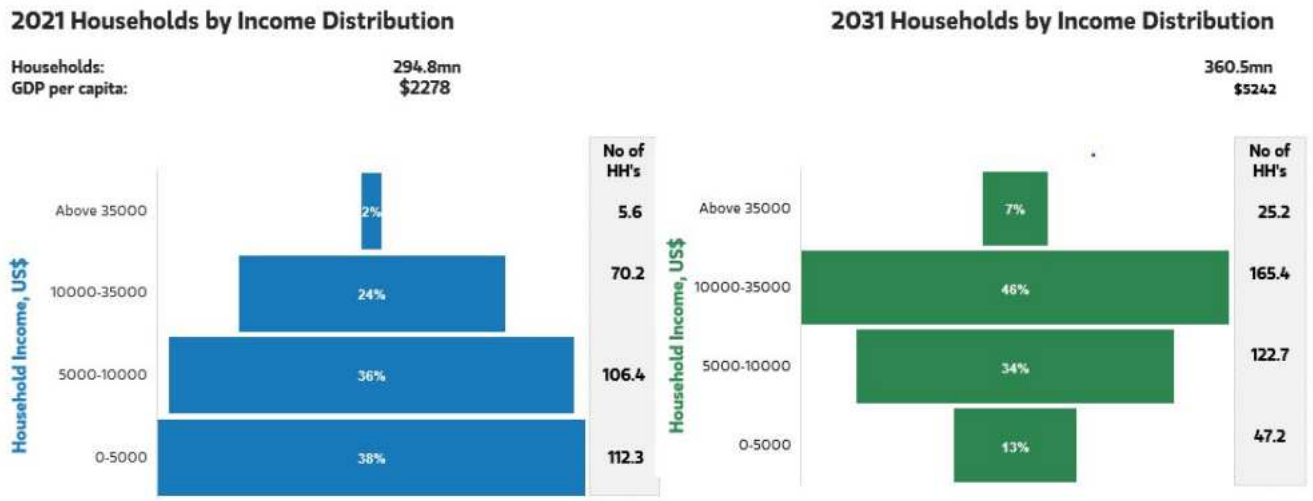
Source: RBI, Morgan Stanley Research estimates. Note: Overall Credit includes banks, NBFCs and HFCs. For NBFCs + HFCs, numbers are based upon bottom-up reported numbers for major listed entities and regulatory reporting

Exhibit 3: ONDC – Unique disruptive force in the consumer market



Source: Morgan Stanley Research

Exhibit 4: Major shift coming in India's income pyramid



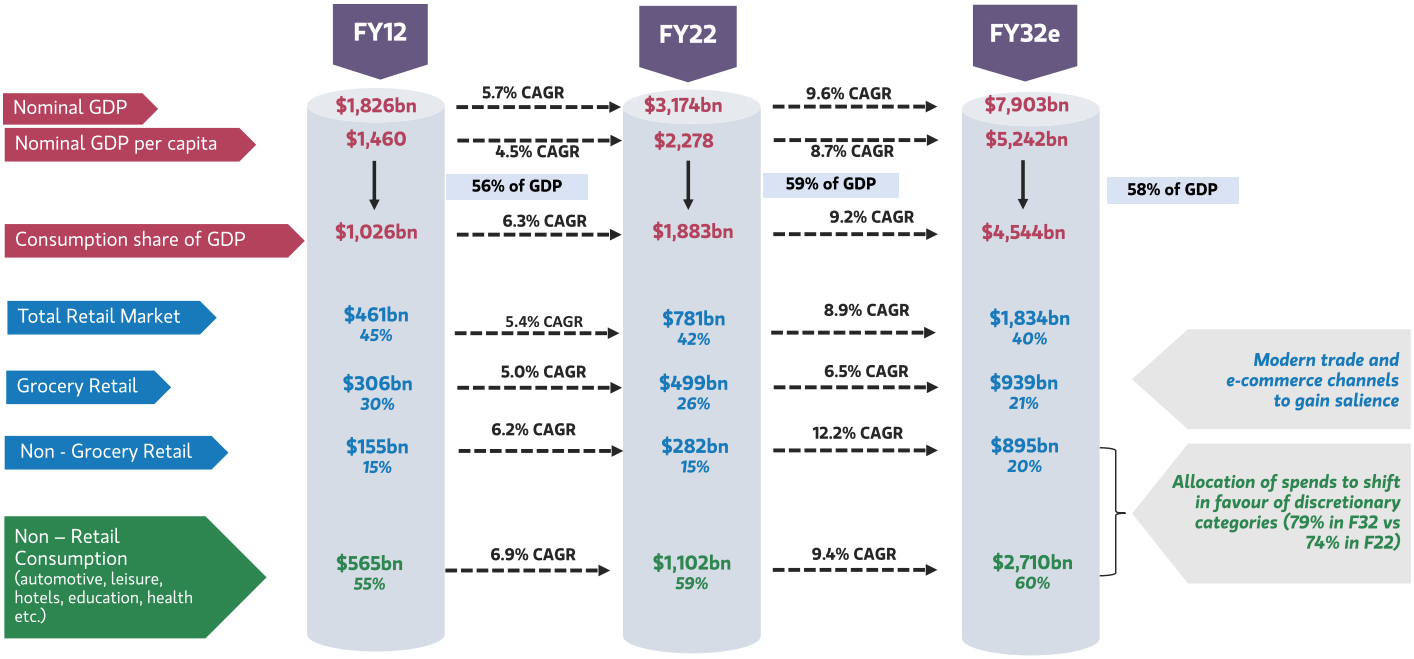
Source: Morgan Stanley Research estimates

The third new layer, a digital health ID, will enable a unified interface which will be interoperable across health service providers. It will allow customized insurance solutions – indeed, it could almost change the concept of insurance – and gives the population better healthcare access.

All these layers are based on user consent and we expect rapid adoption, as we have seen with payments. IndiaStack sets the stage for transaction-led, low-cost, high-volume, small-ticket-sized systems with embedded lending. Credit, which will be flow-based (digital payments will also allow the building of credit histories) and not asset-based, will flow to millions of consumers and small businesses, in turn driving consumption. India will go from a 'prepaid' to a 'postpaid' economy (buy now, pay later). The prepaid model was built by the mobile phone companies before the advent of Aadhaar, when the user was not identifiable.

Implications include a rise in credit to GDP from 57% to 100%, better healthcare services, greater insurance penetration, a quintupling of stock market investors from 62mn (up from 20mn three years ago) to around 300mn, potentially leading to a continuation of the persistent bid on stocks and a material rise in consumer discretionary spend. The breadth of India's income pyramid lends further momentum to consumer spending, which is likely to benefit as India crosses the crucial US$2,000 per-capita GDP level. The number of households earning in excess of US$35,000/year is likely to rise five-fold in the coming decade, to over 25mn.

Exhibit 5: A discretionary spending boom is on the horizon

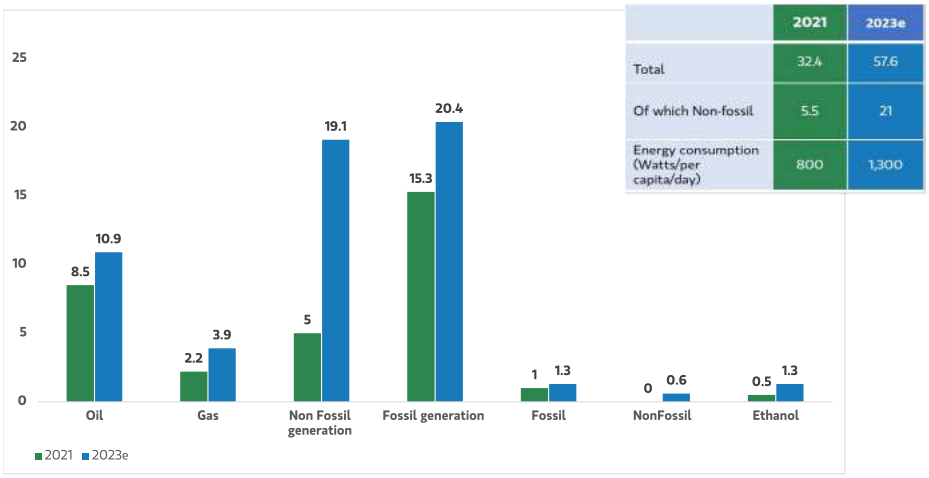


Source: Morgan Stanley Research estimates

3. Energy transition: Building up renewable sources

Energy access is linked to economic prosperity. India's daily per-capita energy consumption is around 800 Watts (excluding food, which adds another 100W). This compares with 9000W/capita/day for the US. Given the big upgrades to transmission and distribution over the past few years (every one of India's 600,000+ villages now has access to electricity, compared to around 500,000 two decades ago), we see a step change in India's energy consumption to about 1300W/capita/day (excluding food, which adds 150W). This jump will occur as India's energy consumption grows from 32.4 Exajoules currently to 57.6EJ by 2031, and will also come with a shift in energy sources from fossil fuels to renewables. Fossil fuel share, we expect, will decline from 83% to 67%, implying that two-thirds of India's new energy availability will come from clean sources like solar, biofuels and hydrogen. That said, since the country is still growing its energy needs, legacy capacity using fossil fuels will not be destroyed as India transitions to a higher share of renewables. This will positively impact India's terms of trade, entails about US$726bn in capex, reduces headline inflation volatility as the imported energy share of GDP declines, lowers fertilizer subsidies, improves living conditions (14 of the 20 most polluted cities in the world are in India), and creates new demand for electric solutions such cars and bikes as well as cold-storage chains and green hydrogen-powered trucks and buses.

Exhibit 6: India's energy consumption



	2021	2023e
Total	32.4	57.6
Of which Non-fossil	5.5	21
Energy consumption (Watts/per capita/day)	800	1,300

Source: Morgan Stanley Research estimate

Foundations of the three pillars

Government policy shift

Profits' share of GDP peaked in 2007 following a major move in policy via the Rural Employment Guarantee Act. Implemented in 2006, this law marked a transfer from profits to wages. Eventually, higher wages should result in higher profits as they lift demand, but this does not quite work in India. Given India's surplus labor and uneven (and often short) supply of goods and services, higher wages have led to a rise in consumer price inflation and stagflation rather than a rise in real growth. For India, a policy to boost profits – and then investments which create jobs and wages – appears to be a more reliable approach to generating higher real growth. Indeed, the experiment between 1999 and 2004, which then caused profits to boom between 2004 and 2007, is evidence of the success of this approach. The government ultimately announced policies to lift the share of profits in GDP starting September 2019. It started with a meaningful reduction in the corporate tax rate, making the regime comparable to the rest of Asia. The rate was reduced from 34.9% (effective) to 25.2%, and a special lower rate of 17% was announced for new manufacturing companies. Furthermore, the government took calibrated, sector-specific steps and, during the pandemic, has undertaken further policies directed at lifting the share of profits in GDP, including production-linked incentive schemes and increased infrastructure investment. These changes since 2019 top some tough reforms in the preceding five years, including the Goods and Services Tax law, the Real Estate Regulation Act, the Bankruptcy Code, and the new inflation framework. The change in policy should not be underestimated since historically India has used tax revenues to fund social spending rather than corporate earnings.

Our multipolar world thesis

For some time now the trend has been away from the unipolar 'Washington consensus', when the world appeared convergent politically, economically, and socially. In Morgan Stanley's multipolar world framework, the US and China will increasingly compete directly in multiple spheres such as technology, security, health and financial markets. Meanwhile, Europe, Japan, and the rest of the world (including large EMs such as Brazil and India) will attempt a balancing act, vying for influence and economic opportunity. As the corporate sector adjusts, one key outcome is the 'slowbalization' trend: a slowdown or even partial reversal of globalization both in revenue mixes and supply chains as some industries shift towards localization. India is tailoring policies to take advantage of the decentralization of supply chains.

Paris Accord

At the COP26 Summit, Indian Prime Minister Narendra Modi announced five key commitments: 1) to increase the country's non-fossil-fuel energy capacity to 500GW by 2030; 2) to fulfil 50% of its energy requirements from renewable sources by 2030; 3) to reduce its total projected carbon emissions by 1bn tons by 2030; 4) to reduce the carbon intensity of its economy by 45% by 2030; and 5) to achieve net zero emissions by 2070. These are ambitious targets given the absolute increase in energy consumption India will witness due to growing economic prosperity and vice versa. This is driving a very favorable government policy towards renewable energy sources and climate change-related investments.

Aadhaar success

Aadhaar is the foundational ID for all Indians, designed to process high volumes at low cost with small-value transactions. After a hesitant start and several challenges, including legal ones, Aadhaar and IndiaStack have become ubiquitous. With 1.3bn people carrying a digital ID, doing financial transactions has become easy and cheap. Aadhaar has enabled the direct payment of social benefits with efficiency and no leakage. UPI has scaled well beyond expectations and now processes 4.5bn payments per month. The success of Aadhaar is the foundation for the new layers that are being built into IndiaStack. The reasons for the success of IndiaStack include a) government support for technology-based solutions, b) it addresses market and/or social needs, c) world-class, open-source, AI-driven technology built at population scale, d) institutions for implementation (NCPI for UPI, RBI for AA, ONDC for digital commerce, UIDAI for Aadhaar), and e) it is a public utility with the government providing free infrastructure for innovators to build applications.

- 1.3bn Aadhaar cards issued, over 50mn daily authentications, over 5mn daily eKYC queries
- UPI processes 4.5bn payments a month, valued at US$100bn. India handles more real-time payments between businesses than any other country, accounting for over 40% of such payments worldwide.
- The Aadhaar-enabled payment system, or AEPS, does several million transactions each month valued at over Rs250bn.
- Cumulative direct benefit transfers of over US$300bn to Aadhaar-linked bank accounts (Jan Dhan).
- Fastag highway toll system which collects about Rs1.3bn/day and is allowing the government to recycle road assets.

The implications

- India's GDP is likely to surpass US$7.5trn by 2031, more than double current levels, making it the third-largest economy and adding about US$500bn per annum on an incremental basis over the decade.
- India's market capitalization will likely grow by over 11% annually, to US$10trn, in the coming decade.
- We estimate that manufacturing's share of GDP will rise to 21% by 2031, implying an incremental U$1trn manufacturing opportunity.
- We expect India's global export market share to more than double to 4.5% by 2031, providing an incremental US$1.2trn export opportunity.
- India's services exports will almost treble to US$527bn (from US$178bn in 2021) over the next decade.
- Credit to GDP rises from 57% to 100%, implying compound annual growth in credit of 17% over 10 years.
- India's per-capita income rises from US$2,278 now to US$5,242 in 2031, setting the stage for a discretionary spending boom.
- The number of households earning in excess of US$35,000/year is likely to rise fivefold in the coming decade, to over 25mn.
- US$1.1trn incremental retail opportunity in ten years. E-commerce penetration to nearly double from 6.5% to 12.3% by 2031.
- Internet users in India to increase from 650mn to 960mn while online shoppers will grow from 250mn to 700mn over the next 10 years.
- 25% of incremental global car sales over 2021-2030 will be from India, and we expect 30% of 2030 PV sales to be EVs.
- India should hit a major inflection point for the next residential property boom in 2030 – a confluence of high per-capita income, a mid-30s median age, and higher urbanization.
- India's workforce in the technology services sector to more than double from 5.1mn in 2021 to 12.2mn in 2031, leading to an increase in office absorption from 32-35msf pa to a run-rate of 45-50msf over the next 5-10 years.
- Healthcare penetration in India can rise from 30-40% now to 60-70%; implying 400mn new entrants to the formal healthcare system.
- The defense budget (US$18bn) is growing steadily (10% CAGR) – traditionally there has been large import dependence (about 60%) but there is now a strong thrust towards local manufacturing.
- US$700bn+ in energy investments over the next decade as India accelerates its energy transition.

Exhibit 7: Key forecasts in this report

Indicator	Current	Base	Bull	Bear	Comments
Overall					
GDP (US$ bn)	3174	7939	9506	6244	Increased outsourcing to India, digital investments, policy initiatives, and energy transition to drive economic growth
GDP per capita (US$)	2278	5242	6277	4123	India's per-capita income is likely to increase from US$2000 currently to roughly US$5,000 by 2031. This would lead to a diversification of the consumption basket
Equity market cap (US$ bn)	3500	10000	13000	6200	Strong earnings growth, persistent domestic bid, an underinvested foreign investor and good macro stability helping India's equity market returns
Factory to the World					
Manufacturing GVA (US$ bn)	447	1490	2001	918	India is emerging as a serious contender to become a factory to the world, driven by both the Morgan Stanley multipolar world thesis and India's policy thrust
Exports (% of world exports)	2.2%	4.5%	6.6%	2.5%	India's global export market share to more than double to 4.5% by 2031, providing an incremental US$1.2trn export opportunity
Office to the World					
IT services exports (US$ bn)	178	527	631	406	Expansion in addressable, emergence of distributed delivery models and tighter global labor markets drive outsourcing to India.
Commercial real estate new construction (msf)	350	500	650	415	Our base case assumes 9.5% growth in IT professionals, and 8.3% growth in office real estate. Plus, a 15% contribution from domestic facing businesses.
Residential real estate value growth %	8%	15%	20%	9%	Resi volumes could go through a prolonged phase of higher-than-GDP growth (300bps) plus price growth in line with headline inflation
Consumer to the World					
Retail market size (US$ bn)	781	1834	2194	1529	As India's per-capita income rises above the US$5,000 level by 2031, we expect an incremental US$1.1trn retail opportunity in 10 years with the allocation of spending shifting in favor of discretionary categories
IndiaStack implications					
Internet penetration	47%	65%	72%	60%	With rapid digitization and democratization of commerce and affordable data, India's internet participation is set to grow – IndiaStack success is key whereas regulatory barriers could slow growth
E-commerce market size (US$ bn)	51	226	329	122	Higher income levels to support higher growth for discretionary categories, driving up overall retail growth along with greater adoption of e-commerce
E-commerce penetration %	6.5%	12%	15%	8%	E-commerce penetration to be led by rising internet penetration and broadening category base
Credit to GDP	57%	100%	107%	91%	Acceleration in retail and MSME segments on back of India's unique, open and secure digital architecture coupled with rising smartphone penetration and advent of new data sharing architecture OCEN/AA.
Retail health and retail term life premiums		18-20% CAGR	25%+ CAGR	15% CAGR	Wider adoption of digital health id could result in acceleration in premium growth in these segments which are large structural opportunities.
Energy transition					
Energy investments ($ bn)		726	870	505	Investments coming from renewable energy, green hydrogen and EV adoption. Investments does not include new investments needed for oil, gas and coal (fossil fuels) over the next decade
Energy demand (Exajoules)	32.4	57.6	62.9	51.0	Increasing access to energy and rising per-capita incomes leading to burst in energy consumption with circular implications for growth and investments
RE incl. hydro as % of power generation	21.6%	41%	41%	37%	Rising manufacturing activity, policy initiatives, higher investments and bottom-up climate change concerns drive a rising share of renewable energy

Source: Morgan Stanley Research

Key investment themes

Financial services: Industry growth will be driven by a lending boom, improved insurance pricing, greater penetration, and sophisticated tech infrastructure.

Consumer discretionary (including autos, auto parts and healthcare services): Gains from rising disposable income, market reorganization and technology.

Industrials, domestic materials and real estate: Capex boom driven by defense indigenization, energy, infrastructure, the internet, materials (especially cement), and, mostly importantly, manufacturing.

Exporters: Rising exports from the diversification of supply chains away from Europe and China and increased offshoring of services to India.

Risks to our view

Global recession or weak growth: India is no longer a small economy and hence depends on benign global economic conditions. With nearly 20% of its output exported – a number that will rise in coming years – the outlook for the global economy has a strong influence on our forecasts. The good news is that India has reduced its dependence on cyclical capital market flows, with its external balances now largely funded by FDI. Developments that could hurt India's growth include a) geopolitical events impacting commodity prices, b) supply-side disruptions affecting both volume and price, and c) political gridlock and overtightening of monetary and fiscal policy.

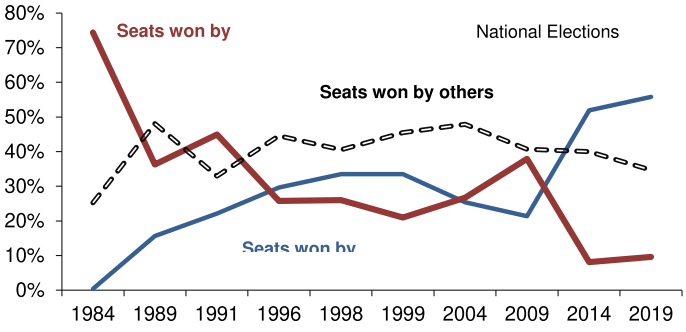
Geopolitics: Given its location, geopolitical events pose a heightened risk to India's economy. However, by virtue of its growing economy and the multipolar world thesis, we believe India will gain power in global geopolitical equations, which will be important to its economic story in the coming decade.

Adverse domestic politics and policy errors: India could vote in a weaker government, as it has done in the past, raising the risk of policy errors. A fractious political situation could also inhibit the ability and willingness of policy makers to continue with the reforms required to achieve a sustainably higher growth rate. Indeed, policy-driven support is embedded in our base-case expectation of a push for capex-led growth. Further, as the economy grows and investment picks up, policy support will become even more critical to expanding infrastructure, developing a skilled labor force, deepening capital markets, and engaging with domestic and foreign investors.

Supply of skilled labor: India will need to train its labor force faster than in the past to keep pace with demand, or its wage advantage will evaporate. As such, while India will be the largest contributor to the working-age population among the major economies, its workforce will need skills training to keep up with technological change. Indeed, as per the India Skills report (2021), not even half of graduates were employable due to a lack of relevant skills.

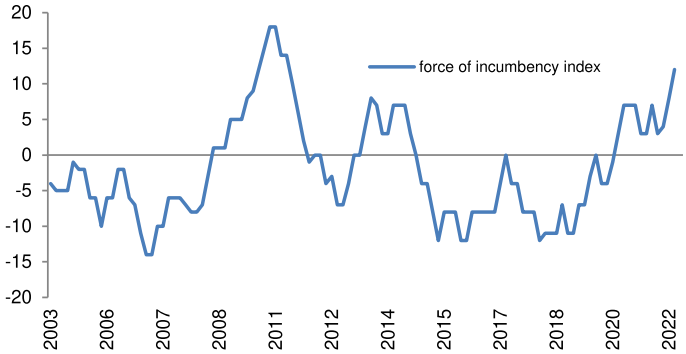
Steep energy and commodity price increases: The transition to non-fossil fuels will take time, and imported energy remains key to India's terms of trade. Energy-related imports (oil, coal, gas) account for a third of imports (although this is down from 44% in F12) and about 13% of the CPI. As such, rising energy prices have an outsized negative impact given that they affect inflation, the current account deficit, and overall economic growth. Higher energy prices expose corporates to input price pressures and currency volatility, households to lower real disposable income, and the government to increased volatility in tax and subsidy spending patterns.

Exhibit 8: Electorate opinion can shift a lot



Source: ECI, Morgan Stanley Research

Exhibit 9: Incumbents can lose as much as win



Source: ECI website, CEIC,, Morgan Stanley Research, Force of incumbency is a Morgan Stanley proprietary indicator which measures the success of incumbent governments in winning the next election

Exhibit 10: Our previous key papers on India

Report	Estimates for	Market cap estimate	MSCI India relative to MSCI EM since the report date (in USD)	GDP forecast
The Next India: From a Cyclical Downturn to a Structural Upturn (12 May 2014)	2025	US$4tn	104%	US$5tn
The Next India: India's Digital Leap – The Multi-Trillion Dollar Opportunity (26 Sep 2017)	2027	US$6.1tn	78%	US$6tn

Source: Morgan Stanley Research

A New Driver of Global Growth

India to propel growth in Asia and beyond

India is reorientating its growth model towards encouraging investment and leveraging exports – taking it closer to the East Asian growth model, which has proved successful for many economies in lifting per-capita incomes. India's economy is compounding at a strong rate on a high base and will be one of only three economies in the world that can generate more than US$400bn in annual economic output growth. With India set to drive a fifth of global growth in the coming decade, we believe it offers a compelling opportunity in a world starved of growth.

India's relevance for global investors is increasing...: No two economies are ever really the same. But comparisons are unavoidable as investors look to frame the developmental path of one economy in the context of another. Just as China's developmental path is often compared to the US, India will be compared to China. The comparison arises primarily because both economies have populations of over 1 billion, and yet China's economy is about five times the size of India's (in nominal USD terms). Undoubtedly because of its economic size today, global investors pay close attention to developments in China even if they are not invested there. In the coming decade, as India's economy transforms, we think it will be increasingly relevant for global investors in a similar way that China is today.

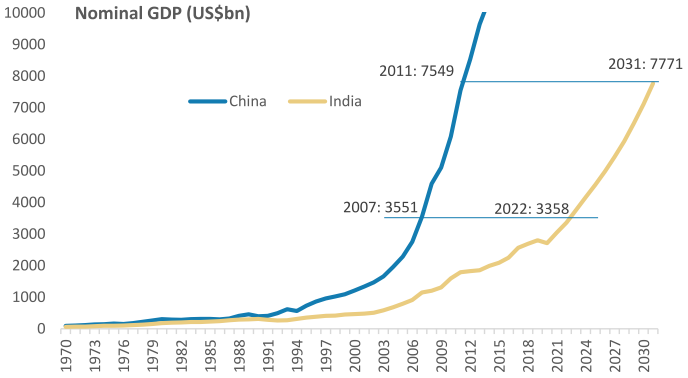
...as its economy is compounding fast on a high base: This context is important as India is emerging as a key anchor of Asian and global growth. Over 2022-23, India will contribute 28% and 22% of Asian and global GDP growth. In the coming decade, India will likely contribute about a fifth of global growth. As we lay out in this Bluepaper, we are constructive on India's structural story and see a number of factors that have been put in place over the past three years to position India well for the coming decade. India is already the world's fifth-largest economy, and we forecast that it will become the third-largest by 2027. The power of compounding at a high rate on a high base means that India will be one of only three economies in the world which can generate more than US$400bn in annual economic output growth from 2023 onward, and this will rise to more than US$500bn from 2028. In other words, India's next decade will very much resemble China's path over 2007-2011, although growth will be a tad slower than the supercharged rates China has seen. Nonetheless, we think that India offers the most compelling growth opportunity in Asia in the coming years. In a world that is currently starved of growth, the opportunity set in India must be on global investors' radar.

Exhibit 11: India's next decade will bear some resemblance to China's 2007-11 transition

	China		India	
US$bn	2007	2011	2022	2031E
Nominal GDP	3551	7549	3358	7771
GDP per capita (US$)	2688	5596	2393	5140
Private consumption	1292	2636	1987	4468
Investment (GCF)	1438	3523	1026	2681
Exports	1353	2100	674	1880

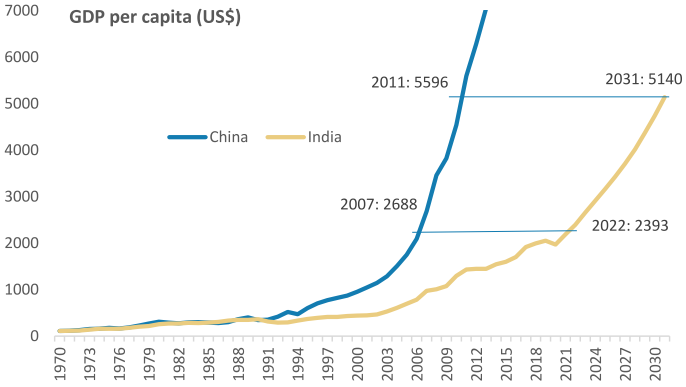
Source: CEIC, Morgan Stanley Research forecasts

Exhibit 12: From a nominal GDP and per-capita income perspective, India resembles 2007's China



Source: CEIC, Morgan Stanley Research estimates

Exhibit 13: Over the next decade, we expect India to follow China's path



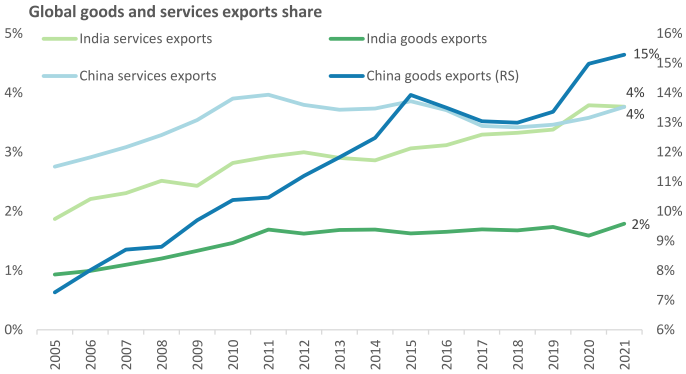
Source: CEIC, Morgan Stanley Research estimates

India is becoming more similar to China than you might think

Moving closer to the East Asian model: We think that India is adopting more elements of the East Asian growth model – one that focuses on leveraging exports as a driver to boost savings, and subsequently recycling it for infrastructure spending, leading to a virtuous cycle and an accelerated growth path. In some ways, India has partly followed this approach through its services exports. The private sector led the creation of a digital infrastructure which boosted India's market share in services exports such as IT services. However, India had earlier not been able to realize its potential in manufactured goods exports, resulting in a lag in the construction of physical infrastructure like railways and roads, which are usually undertaken by the public sector. This created a situation where India's market share in global services exports is higher than its share in global goods exports, while the reverse is very much the case for other Asian economies, most prominently China. India's recent moves to attract and boost manufacturing exports take it one step closer to the East Asian growth model, and the gain in manufacturing exports will complement India's existing strengths in services exports.

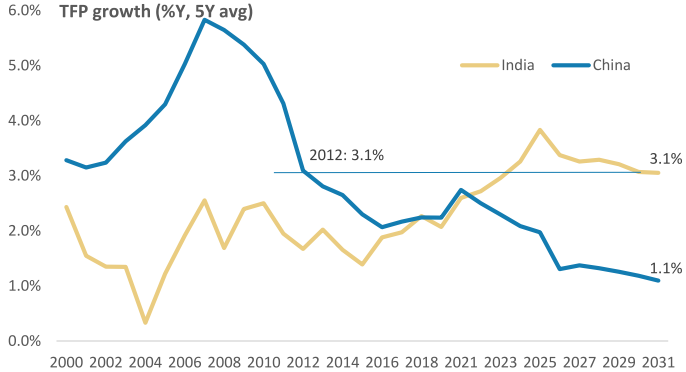
Moving onto the steeper part of the S-curve: In the past, the balance in India's policy mix had been somewhat skewed towards redistribution rather than growing the pie, but there has been a sea change in its policy approach. Policy makers have trained their focus significantly on the supply side. Since 2019 they have progressively cut corporate taxes, introduced production-linked incentive schemes to attract manufacturing investment in a concerted manner, and lifted public capex as a share of GDP to a near 17-year high.

Exhibit 14: Focus on improving goods exports competitiveness alongside already robust services export competitiveness will mean India can follow the East Asian export-led development model...



Source: CEIC, Haver, Morgan Stanley Research. Note: Transport services exports has been excluded from overall services exports due to the fact that it relates more to goods exports and leads to distortions in services exports data.

Exhibit 15: ...bringing in a more productive growth cycle



Source: CEIC, Morgan Stanley Research forecasts

After these reforms on the supply side – combined with the earlier GST reform and digitalization of the economy – the cost and ease of doing business in India have improved considerable. While these reforms have already been in place for some time, India was nonetheless impacted by its own history of coming out from a deep cyclical downturn and was also, like the rest of the world, facing the challenges of the Covid pandemic.

As we progress further into the recovery cycle, the combination of cyclical tailwinds and structural reforms will lift investment to GDP ratios higher, creating employment, integrating and assimilating the growing workforce, lifting productivity and income growth. This sustained and sustainable rise in incomes boosts consumption prospects. This, in our view, has been the virtuous cycle that has kickstarted so many of the growth stories in Asia over the last 50 years, with Japan pioneering this approach, the Asian tigers replicating it, and subsequently China doing it at scale. We believe India will be the next economy in the region to adopt this model successfully and it will move onto the steeper part of the S-curve, where nominal GDP will be compounding at a strong rate on a high base.

The coming decade will more closely resemble 2003-2007 than the past decade: When viewed from this perspective, it is clear that India has embarked on and reaped the benefits of such an approach before. During the 1990s, policy makers in India also took significant reforms on the supply side in response to the BOP crisis in 1991 and the Asian financial crisis of 1997-1998. From the early 2000s, with the cleanup of its balance sheet complete, investment to GDP ratios began to rise and started a virtuous growth cycle from 2003-2007.

However, after the 2008 global financial crisis, policy makers shifted the policy mix more towards redistribution, weakening the productivity dynamic. Predictably, macro stability indicators became stretched and the central bank had to tighten monetary policy aggressively in response to the rise in US real rates as the Fed indicated its plan to taper its asset purchases in 2013. To correct the macro imbalances at that time, policy makers took up systematic measures which reduced macro stability risks and cleaned up balance sheets.

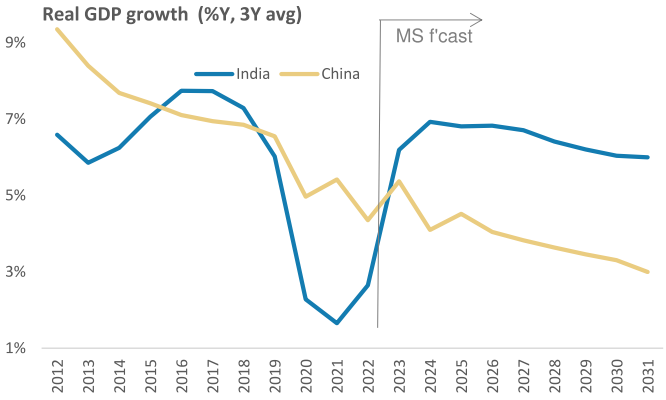
Since 2019, policy makers have made what we see as a concerted effort to reform the supply side. Corporate taxes were cut, production-linked incentive schemes were introduced in 2020, and policy makers lifted public capex spending. Even as growth headwinds began to build in 2022, policy makers have remained steadfast in their commitment to focus on reforming the supply side, as well as seeing the role of subsidies as empowering individuals rather than as an entitlement.

Where India will still be different

We highlight five ways in which India's outlook will still be somewhat different from China:

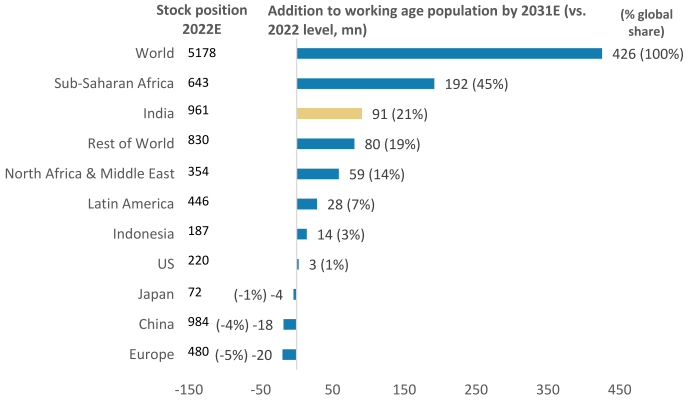
1) Productivity growth differential to swing in India's favor: For the past three decades, India has sustained just half of China's total factor productivity (TFP) growth rate, averaging just 2% compared to 4.1% in China. However, we expect this TFP growth differential to swing in India's favor over the next decade. As cyclical and structural drivers lift India's investment to GDP ratio and employment, this will help boost productivity growth and we expect India's TFP growth to accelerate to an average of 3.4% over the next 10 years, vs. 1.2% for China. The stronger TFP growth will help support a higher real GDP growth rate for India, which we expect to average 6.6%, whereas our chief China economist, Robin Xing, expects China's real GDP growth to average just 3.6% over the next 10 years. Putting this into a broader context, the nominal GDP growth rates for the US, China and India are likely to be 4%, 6% and 11% over the same period.

Exhibit 16: India to sustain a higher terminal rate and a longer growth runway as compared to China...



Source: CEIC, Morgan Stanley Research forecasts

Exhibit 17: ...helped by favourable demographic trends

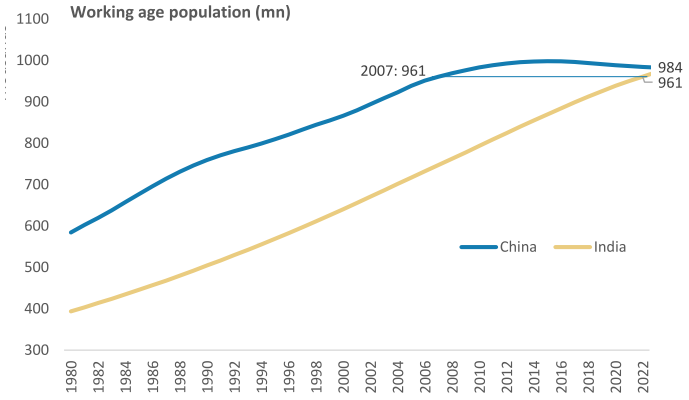


Source: Haver, UN forecasts, Morgan Stanley Research. Note: Sub-Saharan Africa and North Africa & Middle East as regional aggregates defined by UN under their sustainable development goal.

2) A higher terminal rate and a longer growth runway: The differing demographic outlook is also one of the key reasons India can still sustain much higher growth rates as compared to China. At the outset, India's per-capita income of US$2400 is where China was back in 2007. While this is a 15-year gap, India's median age today is 28, which is 11 years younger than China today. Interestingly, the size of India's working-age population today is also right where China was in 2007. In other words, while there is a gap between the two economies' developmental paths, the gap is smaller when the state of demographics is accounted for. China's worsening demographic situation has gathered more attention recently, with investors trying to work out where structural growth rates would be as these headwinds start to build. India, on the other hand, having not taken up aggressive population control measures, has a much longer demographic runway. Indeed, UN projects that India's working-age population will continue growing until 2050 whereas China's working-age population has been in decline since 2015. While demographics is not the only determinant of long-term growth rates, it is an important factor and forms part of the basis of our view that India's terminal (i.e., beyond 2030) growth rate will remain much higher than China's.

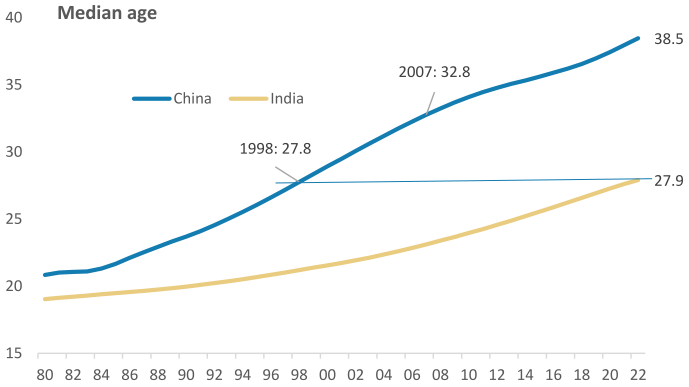
3) India's consumers will be a global driving force: We project that India's private consumption will more than double from US$2trn in 2022 to US$4.5trn by the end of the decade, a size that would be roughly similar to China in 2015. At the starting point, the consumption share in GDP has been higher in India as compared to China. We expect this ratio to remain relatively high in India. Hence, when thinking about the implications of the growth trajectories of these economies on the rest of the world, we think that just as one should be paying closer attention to China's investment path, we should pay closer attention to India's consumption path.

Exhibit 18: The positive demographic trend...



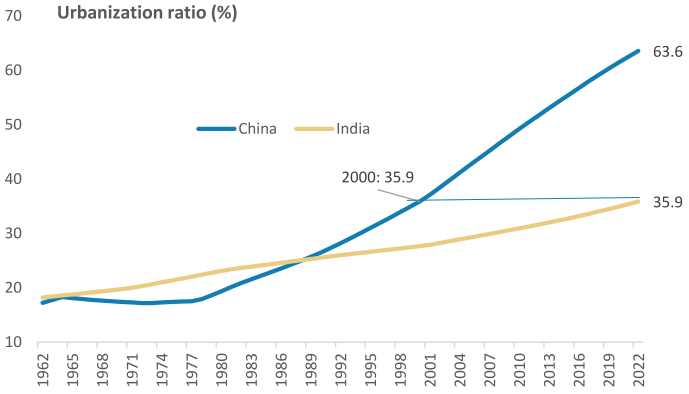
Source: Haver, UN, Morgan Stanley Research

Exhibit 19: ...will support income growth



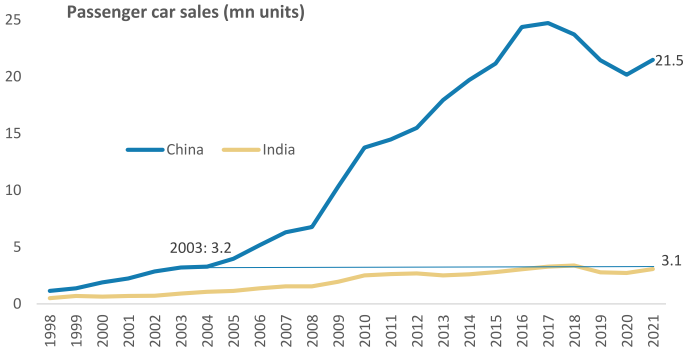
Source: Haver, UN, Morgan Stanley Research

Exhibit 20: India also lags in urbanization ratio vs. China at the same per-capita income level, and the potential for catchup will have positive impact for employment...



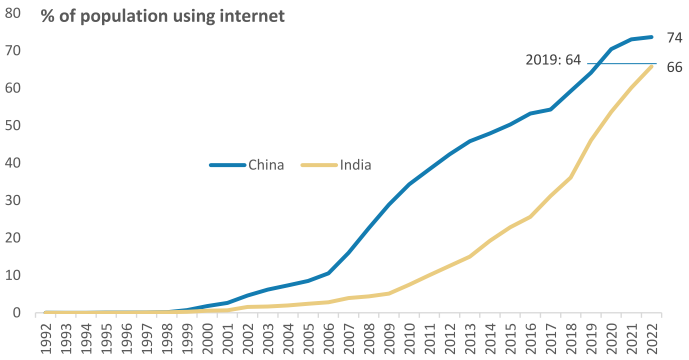
Source: Haver, UN, Morgan Stanley Research

Exhibit 21: ...and consumption, bringing transformative sectoral implications



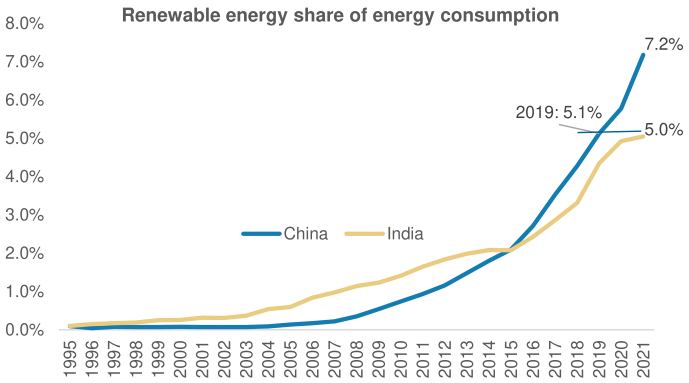
Source: CEIC, Morgan Stanley Research

Exhibit 22: On the other hand, India is already ahead of 2007 China on digitalization...



Source: Haver, Statista forecasts, Morgan Stanley Research

Exhibit 23: ...and in energy transition, and generating unique opportunities along the way



Source: Haver, BP statistical review of world energy, Morgan Stanley Research

4) Investment to GDP ratio will peak at a lower level: One of the key hallmarks of China's growth over the past few decades has been the fast-paced growth in investment and elevated investment to GDP ratios. This faster pace of investment growth can be attributed to three reasons: 1) a stronger focus on boosting manufacturing exports, which kept infrastructure spending and business investment high, 2) a much sharper decline in the age-dependency ratio, and 3) a faster pace of housing investment as private property ownership took off meaningfully post 1998 from a starting point of 18% share. Taken together, China's investment to GDP ratios rose to much higher levels compared to emerging markets. In contrast, India, with a slower pace of evolution in its demographics, partial reliance on services exports (which is less infrastructure intensive) and a more gradual rise in housing investment, will likely see a slower pace of investment growth. We forecast India's investment keep rising to a peak of 36% of GDP. For context, China's investment to GDP ratio peaked at 47% and is currently still at 43%. In absolute terms, India's investment will rise to US$2.7trn by the end of this decade, from US$1trn today.

5) MNCs will be able to participate more actively in India's growth: A third key difference between the India and China stories is the extent to which MNCs will be able to participate. In China, the policy approach has been to be selective in encouraging foreign participation in the initial growth stage of any industry. For instance, the OECD's FDI regulatory restrictiveness index shows that while China has been opening up over the years, the pace had been relatively quick prior to 2007 and has again picked up post 2014. As measured by this same index, it would suggest that India is more open to FDI today as compared to where China was back in 2007 (when per-capita incomes were similar). Moreover, within the tech sector, a similar measure by the OECD (the digital services trade restrictiveness index) suggests that India has been consistently more open as compared to China (since the data was collected from 2014). Against this backdrop, MNCs are already operating in India, trying to reap the benefits of a strong growing domestic market.

India's journey to an above US$7.5 trillion economy

In sum, the rise in India's GDP will be very similar to China's trajectory over 2007-11. We highlight a few key characteristics that will define India's growth trajectory:

1. Boosting investment and leveraging exports as growth drivers will unleash productivity growth, and its differential with China will swing in India's favor.
2. As this virtuous cycle gets underway, India's economy will be compounding at a strong rate on a high base, contributing a fifth to global growth. It will be one of only three economies generating more than US$400bn of annual economic output from next year onward.
3. India's growth trajectory will feature a higher terminal growth rate and a longer runway. Its demographic trends will remain favorable well beyond 2030 and per-capita incomes offer plenty of scope for catch-up rates of growth.
4. Compared to China, India's investment to GDP ratios will rise but peak at a lower level as its demographic and property investment trends will unfold at a more gradual pace and India will still be relying on services exports. India's private consumption will more than double to US$4.5trn by the end of this decade, similar in size to China in 2015.
5. India currently has a more open competitive landscape as compared to China, with fewer restrictions on FDI, including in the technology sector, which means MNCs are able to participate more actively in India's growth story.

The Factory to the World

Manufacturing pie could increase 3x by 2031: A shift in government policy towards supporting investment, alongside the transition to a multipolar world, is set to alter India's economic structure in the coming decade. We estimate that manufacturing as a share of GDP will rise from 15.6% currently to 21% by 2031, which implies manufacturing value rises from US$447bn to US$1,490bn.

India's export market share to more than double by 2031: As India's manufacturing base expands, we expect a spillover into its export market share. We estimate that India's export market share can rise to 4.5% by 2031 from 2.2% in 2021. This is based on the assumption that India's exports rise at an 11.6% CAGR over the next 10 years, above the 7.7% pace of the previous 10 years, which excludes the pandemic's impact. This implies that the size of the export pie (both goods and services) will rise to US$1,880bn by 2031.

Ramping up infrastructure: Building state-of-the-art infrastructure is a government priority, as reflected in higher public spending as well as policies focused on ensuring adequate financing and the monitoring of government targets. We expect infrastructure spending to increase from 4.6% of GDP in 2020 to near the previous peak of 7-7.5% by 2031.

#1: Manufacturing

Key enablers of the manufacturing push

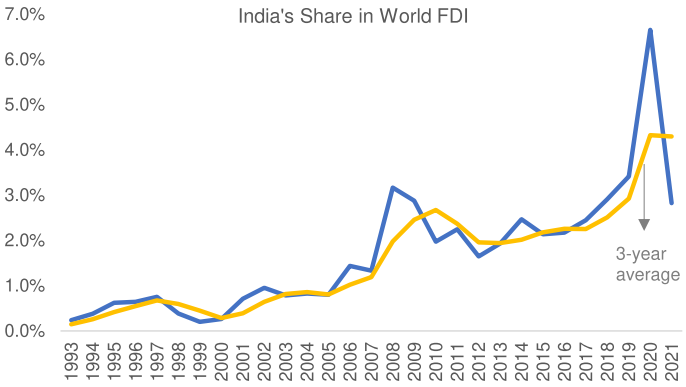
(i) Transition to a multipolar world brought about by changing global trade relations

We believe India will be a key beneficiary of the transition to a multipolar world. This trend has accelerated owing to US-China trade tensions and pandemic-related supply chain disruptions. Yet even as external factors lead to a push for greater supply chain diversification (China plus one), domestic policy makers are taking steps to integrate with global supply chains and reduce exposure to a particular country. China, we note, accounts for 15.4% of imports and is India's largest import partner.

Rewiring the global economy for a multipolar world: Recent geopolitical events have accelerated the shift towards slowbalization and a multipolar world. US-China trade tensions drove policies aimed at strategic decoupling in key technologies, a trend that should affect more sectors over time as tech diffuses. The pandemic increased the desirability of 'just in case' over 'just in time' logistics. Russia's invasion of Ukraine, and the cost of the sanctions response, demonstrated the security benefits of relying on one's allies rather than rivals for economic needs. We expect these incentives to drive governments and corporations to invest substantially in on-, near-, and friend-shoring of value chains.

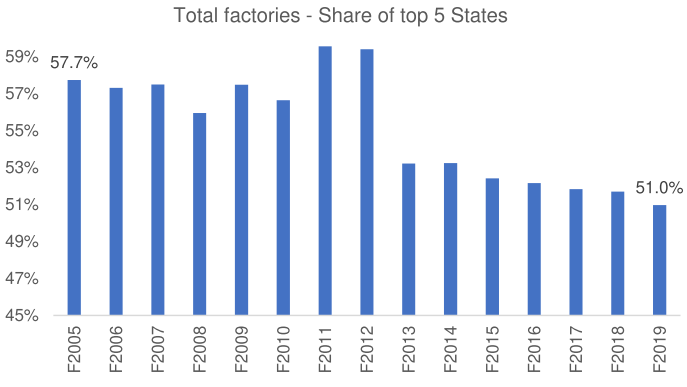
The government is taking concerted policy steps to address issues that can help improve the competitiveness of domestic industry. We discuss these steps below.

Exhibit 24: Transition to a multipolar world – India's share in global FDI is rising



Source: UNCTAD, Morgan Stanley Research

Exhibit 25: Government's supply-side reforms helping to reduce concentration of investments



Source: RBI, Morgan Stanley Research

(ii) Government supply-side reforms

Since 2014 the government has taken steps to address the ease of doing business in the country. Policy measures have been stepped up in the last few years as the government has taken specific actions to make domestic manufacturing more competitive:

Reduced corporate tax rates: Corporate tax rates have been reduced from 30% to 22% (without exemptions), cutting the effective tax rate from 35% to 25% for existing companies and from 25% to 15% for new manufacturing firms. (This was applicable to companies incorporated on or after October 1, 2019, and with production starting before March 31, 2023.)

Production-linked incentive (PLI) schemes to push domestic manufacturing: In March 2020, the government introduced PLI schemes to step up indigenous manufacturing capacities. On an aggregate basis, PLI schemes span 14 sectors with an expected total outlay of Rs2.47trn (US$32.9bn).

Labor reform: The rationalization of labor laws into four codes – the Code on Wages, the Occupational Safety, Health and Working Conditions Code, the Code on Social Security, and the Industrial Relations Code – will encourage efficacy in implementation. These well-defined codes are aimed at addressing specific aspects to ensure the overall welfare and security of workers.

Expansion of infrastructure: The leading Asian economies have invested in physical infrastructure to create an environment conducive to export-led growth. China invested in infrastructure through state funding and often did this countercyclically. China's infrastructure spending has consistently been above 8% of GDP since 2004 – the key focus areas were transport, electricity and power infrastructure spending. The Indian government has launched a National Infrastructure Pipeline (NIP) that aims to improve project preparation, attract financing and provide details of all projects above US$1bn. Currently the NIP has identified over 9,000 projects, with nearly 2,200 under implementation.

Exhibit 26: Summarizing PLI scheme metrics across sectors

Category	Approval by Cabinet	Period	Outlay	Production	Exports	Investment	Jobs
		years	*INR bn*	*INR bn*	*INR bn*	*INR bn*	*thousands*
Semiconductor and Display Ecosystem	15-Dec-21	5	760				
Autos & Drones	15-Sep-21	5	260.58	2315		475	760
Textiles	08-Sep-21	5	106.83	3000		190	750
Specialty Steel	22-Jul-21	5	63.22	2500	330	400	525
Advanced Chemistry Cells Battery Storage	12-May-21	5	181			450	
High-Efficiency Solar PV Modules	07-Apr-21	5	45			172	150
White Goods (Air-conditioners and LED lights)	07-Apr-21	5	62.4	1680	644	79.2	400
Food Processing	31-Mar-21	6	109	335	278.2		250
IT Hardware	24-Feb-21	4	73.25	3260	2445	27	180
Pharmaceutical Drugs 2.0	24-Feb-21	6	150	2940	1960	150	100
Telecom & Networking Products	17-Feb-21	5	122	2400	2000	30	
Medical Devices	21-Mar-20	5	34.2	684.4		8.74	34
Pharmaceutical Drugs (KSM/API)	21-Mar-20	8	69.4			53.66	
Large-scale Electronics Manufacturers	21-Mar-20	5	409.5	10500	>60% of production	110	800
Specified Electronics Component Manufacturers Round 2	11-Mar-21	4	21				
Total			**2467**	**29614**	**7657**	**2146**	**3949**

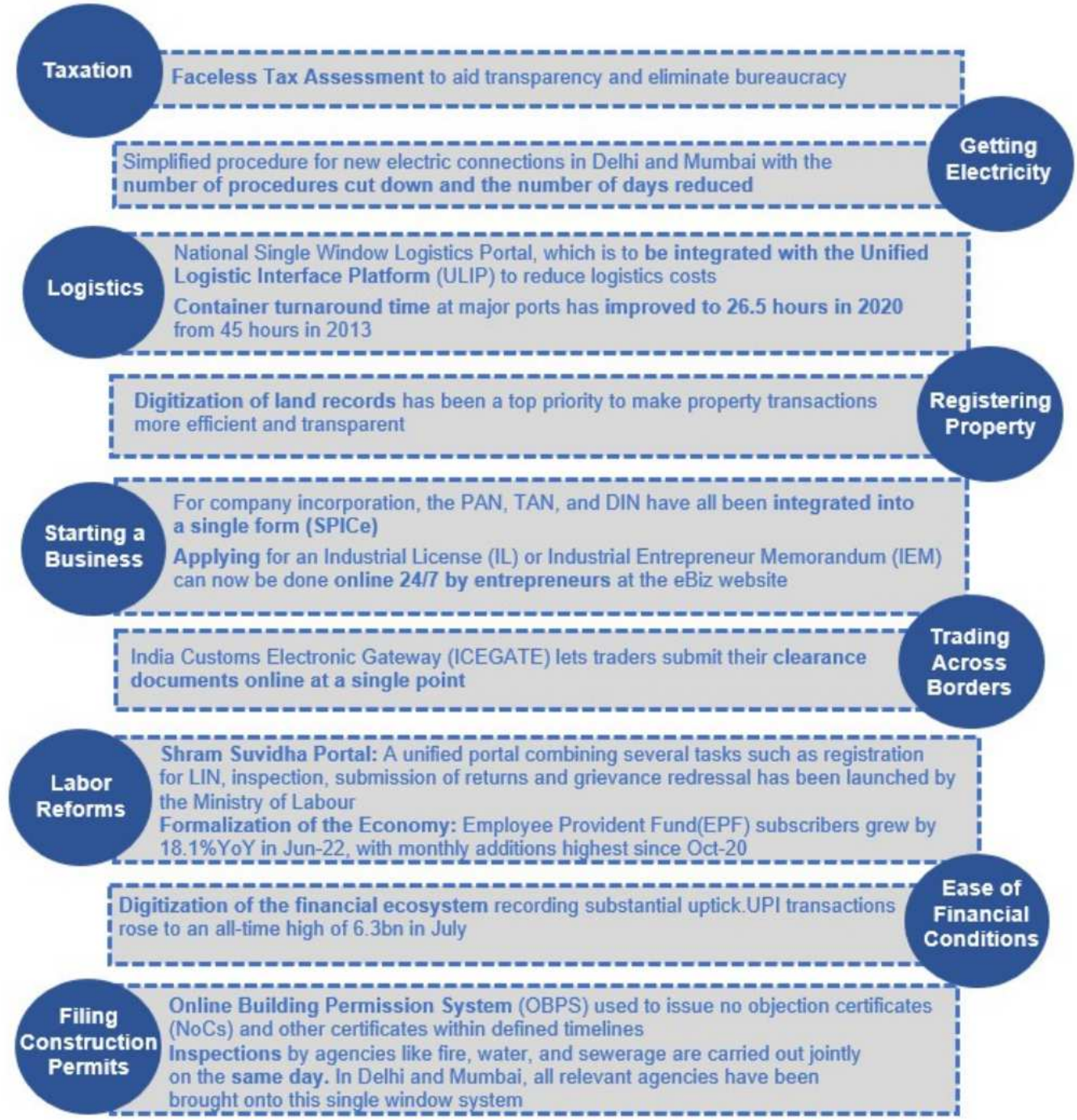
Source: Government of India, Morgan Stanley Research

Exhibit 27: Supply-side reforms to make doing business easier

Measure	Objective and Impact
Production-Linked Incentives	Boost large-scale domestic manufacturing in 14 sectors to reduce imports and increase global market penetration
Labor Reforms	Codification and rationalization of labor laws to facilitate flexibility in implementation. Key states have taken the lead in tweaking state labor laws
Land Reforms	Creation of land banks so as to make land easily identifiable for industrial projects and simultaneously provide details about logistics
Direct Benefit Transfers	Government benefits and subsidies are transferred directly to citizens living below the poverty line. This facilitates transparency and reduces system leakage
Direct Benefit Transfer: e-RUPI	e-RUPI are non-transferable prepaid vouchers delivered to the mobile phones of beneficiaries in an SMS string or a QR code. They do not require beneficiaries to have a bank account, thus ensuring access to welfare benefits for the unbanked population
Tax	The **corporate tax rate** was reduced from 25% to 15% for new manufacturing firms, bringing it broadly in line with other Asian countries
	The **Goods and Services Tax** was introduced in 2016, with the objective of simplifying the tax system by subsuming all indirect taxes and establishing 'One Nation, One Tax'. It helps avoid cascading of taxes and is easy to administer
	Abolition of the retrospective tax ensures that no tax demand shall be raised on the basis of a retrospective amendment for any indirect transfer of Indian assets for a transaction before 28 May 2012
National Asset Monetization Plan	National Monetization Pipeline to monetize the core assets of the central government through F2025. The pipeline is expected to realize potential funds worth Rs6trn through capital recycling of about 20 infrastructural sub-sectors, with the share of roads being the highest at 27% of the total.
PM Gati Shakti	With an allocation of Rs100trn, the PM Gati Shakti master plan aims at coordinating the planning of all infrastructure connectivity projects announced under the National Infrastructure Pipeline. It aims at minimizing delays between the government and stakeholders by focusing on ending inter-ministerial silos
Insolvency and Bankruptcy Code	Considered one of the biggest insolvency reforms in modern Indian history, the code was enacted for the reorganization and insolvency resolution of corporate persons, partnership firms and individuals in a time-bound manner for the maximization of asset values
National Asset Reconstruction Company Limited (NARCL)	The central government has approved a guarantee of Rs306bn to back security receipts issued by NARCL to set up a 'bad bank' for acquiring stressed loan assets. The guarantee by the government will help provide contingency buffers, impart credibility, and enhance liquidity (the security receipts are tradable)
Inflation Targeting & Monetary Policy Committee	The RBI adopted the flexible inflation-targeting framework in 2016, with the primary objective of ensuring price stability, i.e. keeping inflation at 4% within a tolerance of ±2% while also focusing on economic growth. Further, rate decisions are now taken by a monetary policy committee consisting of external and internal (RBI) members

Source: GoI, Morgan Stanley Research

Exhibit 28: Government initiatives to facilitate an attractive business environment



Source: Media reports, government documents, Morgan Stanley Research

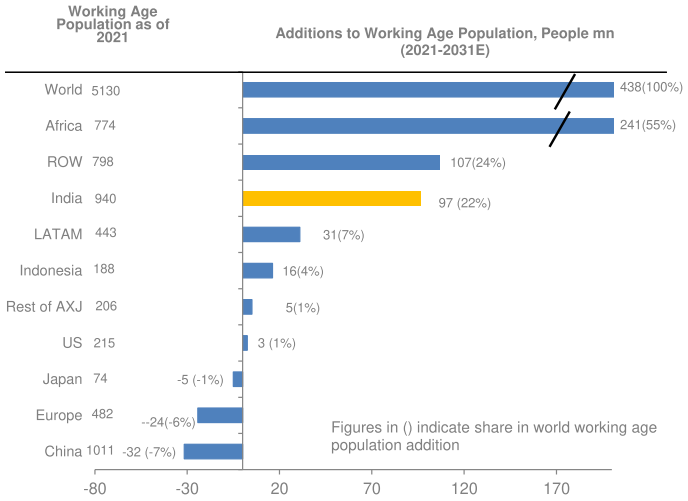
(iii) India's cost advantage – India to leverage its demographic profile, which entails a rapidly growing working-age population, improving trends in education and skill training, and lower wages

Demographic profile – Fast-growing working-age population: India's age dependency has been declining since the 1970s and is expected to continue declining until 2040. According to UN estimates, by 2030 India will emerge as one of the largest suppliers of labor, accounting for almost 23% of the increase in the global working-age population. Indeed, the growth rate for India's working-age population is expected to remain higher than the world average (ex-India) through 2038. A higher share of working-age population relative to dependents creates an opportunity to accelerate economic growth through the creation of productive job opportunities, which create the virtuous cycle of higher income --> higher savings --> higher investment --> higher job creation --> higher income.

India's low labor costs give manufacturers an edge: Inherently, India is a labor surplus economy. As such, its wage rate per employee is among the lowest in the world, which creates a competitive advantage for Indian firms to lower the cost of production. In 2021, the manufacturing wage for India stood at US$0.8/hour, lower than Indonesia at US$1, China at US$7.1 and Korea at US$22.3. In our view, this should encourage India to spearhead domestic production and export labor-intensive goods and emerge as a global leader, ushering in a manufacturing renaissance. Further, as the pace of infrastructure spending increases, the logistics costs incurred by manufacturers will also come down. India's logistics costs are estimated at about 14% of GDP, but the government aims to bring this down to a high single digit (around 8% of GDP) – in line with developed countries – via infrastructure development and process-related reforms. India's port turnaround time has fallen to 2.12 days in 2019 from 4.63 days in 2009, however this is still high compared to the global average. Indeed, on the efficiency of seaport services metric under the GCI reported by the World Bank, India's score is 4.55 out of 7, a tad better than 4.5 for China.

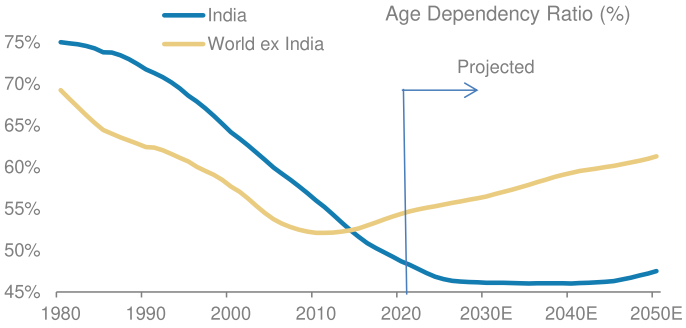
Large consumption base provides an attractive internal market: India is home to the second-largest population in the world. The importance of consumption to the Indian economy is bolstered by its share in GDP, currently tracking at 60%. India's middle-class population is the largest in the world in absolute terms. This provides incentives for indigenous manufacturers to accelerate production levels.

Exhibit 29: India expected to add 22% of the world's working-age population by 2031



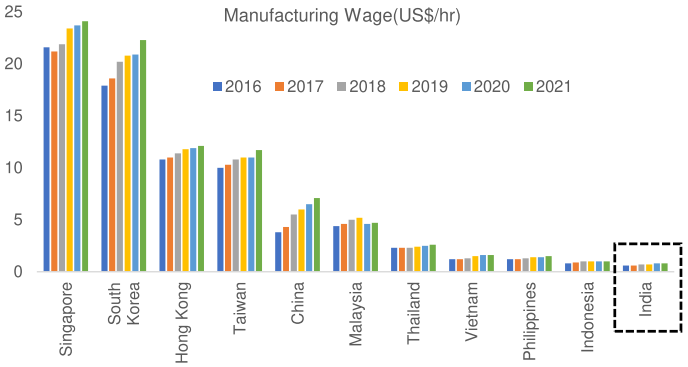
Source: UN Population Database estimates, Morgan Stanley Research. * Africa is the sum of 58 countries, ^ Rest of AXJ is 10 AXJ economies ex India, Indonesia and China

Exhibit 30: India's age dependency to be lower than the world's average



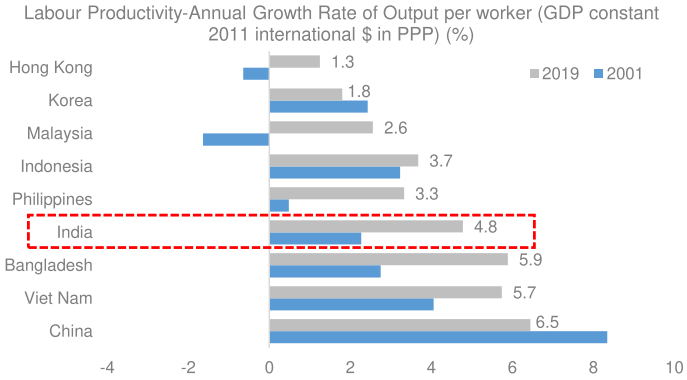
Source: UN, Haver Analytics, Morgan Stanley Research. E = UN estimates

Exhibit 31: Manufacturing wage (US$/hour)



Source: Euromonitor, Morgan Stanley Research

Exhibit 32: Labor productivity

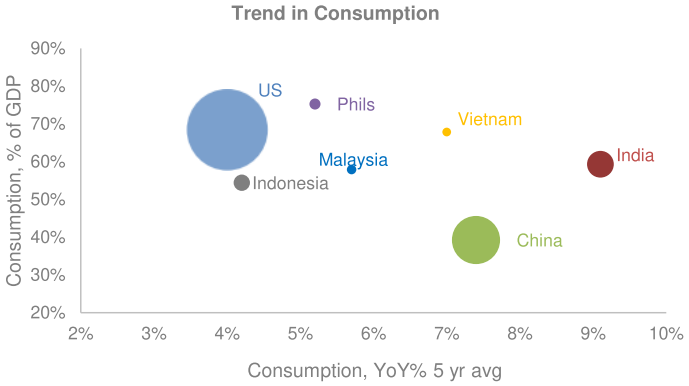


Source: ILO, Morgan Stanley Research

Indicator	Unit	China	India	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand	Vietnam
Population size	mn persons	1444.2	1393.4	276.4	51.3	32.8	111	5.9	23.9	70	96.2
Working-age population (age 15-64)	mn persons	1010.8	939.8	187.6	36.5	22.7	71.9	4.3	16.9	49.1	67.4
Labor force (15+)	mn persons	793.8	471.3	139.2	28.6	16.3	43.8	3.4	11.9	39.1	56.2
'-- basic education (primary/lower secondary)	% of labor force	NA	75	56	13.9	23.6	69.4	14.3	15	58.3	60.6
'-- intermediate education (upper sec/post-secondary)	% of labor force	NA	10.9	31.2	32.6	47.7	5.1	26.9	31.9	23.2	24.3
-- advance education (tertiary)	% of labor force	NA	14.1	12.7	53.3	28.7	25.5	58.9	53.1	17.5	15.1
Literacy rate	%	96.8	74.4	96	97.9	95	96.3	97.5	96.1	93.8	95.8
Manufacturing wage	US$/hr	7.1	0.8	1	22.3	4.7	1.5	24.1	11.7	2.6	1.6
Minimum wage	US$/hr	1.9	0.3	0.7	8.9	1.4	1.7	NA	5.1	1.5	0.7
Corporate tax rate	%	25	15-25	25	25	24	30	17	20	20	20
Competitive Industrial Performance Index	rank(2019)	2	38	40	5	22	43	9	8	25	36
Efficiency of seaport services (GCI)	(1 to 7 (best))	4.5	4.55	4.4	5.46	5.2	3.68	6.45	5.4	4.08	3.84
Air transport, freight	mn ton-km	19264	875	675	12457	817	361	3020	NA	684	572
Border clearance efficiency (GCI)	(1 to 5 (best))	3.29	3.0	2.67	3.4	2.9	2.5	3.89	3.5	3.1	3

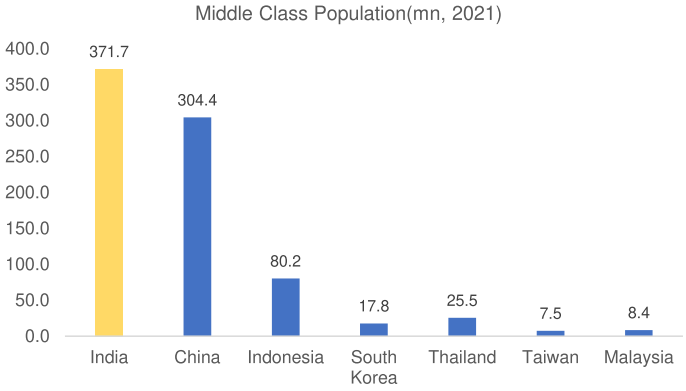
Source: Euromonitor, World Bank, ILO, UNIDO, Morgan Stanley Research

Exhibit 33: India's consumption trend relative to peers



Source: CEIC, Morgan Stanley Research

Exhibit 34: India has a large middle-income population



Source: Euromonitor, Morgan Stanley Research. Note: The middle class is defined as the number of households with between 75% and 125% of median income, and the middle class population is then calculated using average household size

Long-term manufacturing outlook

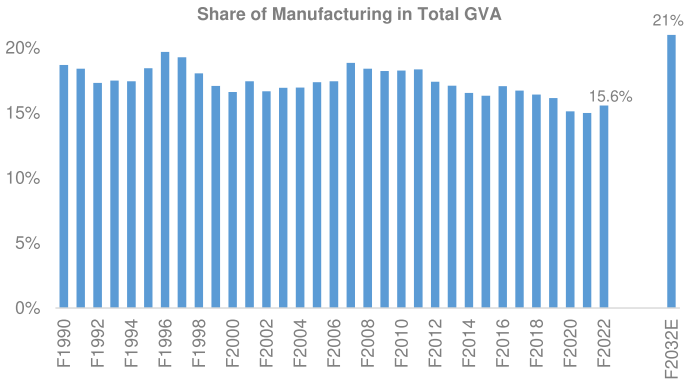
(i) Overall share in GVA to increase from 15.6% to 21% in 2031

We believe India's medium-term growth trends will be supported by the interplay of demographics (strong growth in the working-age population), reforms (helping improve productivity), and increased integration with global economy (accelerating productive job opportunities, income and savings). Further, we believe the cumulative impact of sustained policy measures to improve sentiment for domestic and foreign investors will begin to support a more meaningful acceleration in GDP growth. We believe that policy makers' focus on manufacturing-led growth implies a steady rise in the share of manufacturing in GDP.

Manufacturing pie could increase 3x by 2031: We estimate that manufacturing as a share of GDP will rise from 15.6% of GDP currently to 21% by 2031, which implies that manufacturing revenue rises from US$447bn currently to around US$1,490bn. This change in economic structure will be driven by the points highlighted above – i.e., changing trade relationships and proactive policies focusing on manufacturing sector growth. We note our assumption of a rise in manufacturing as a % of GDP is still gradual and below the government's targeted level of 25% of GDP. It is also slower when compared with the pace of increase that East Asian economies witnessed during their periods of industrialization. This is because the global growth environment that India will operate in is different to when East Asian economies focused on export-led industrial models. We believe India will need to focus more on improving competitiveness and productivity so that it can tap into global growth.

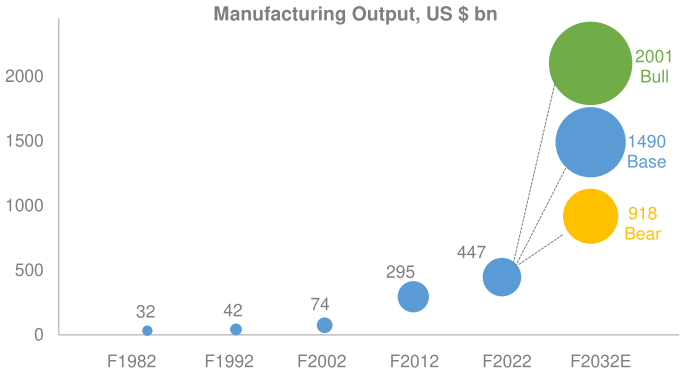
In terms of real growth, the manufacturing sector growth will be above headline growth, at around 9-9.5%, while agricultural growth will be 4-4.5% and services around 6-6.5%. This implies that the next decade will be led by the manufacturing sector, just as the 2000s were led by the emergence of new service sectors.

Exhibit 35: Share of manufacturing to increase to 21% of GDP by 2031



Source: CEIC, Morgan Stanley Research estimates

Exhibit 36: Trend in India's manufacturing GVA



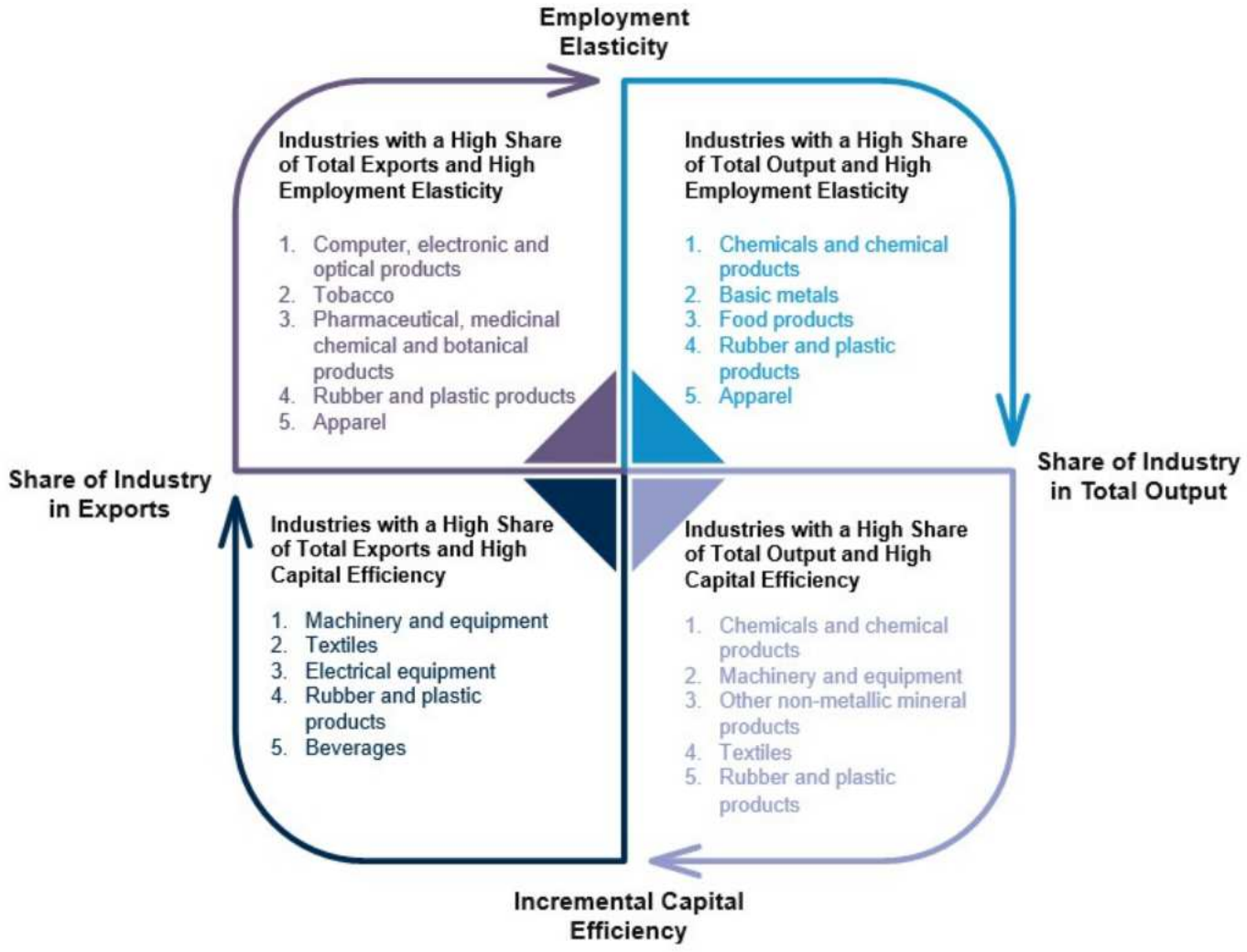
Source: CEIC, Morgan Stanley Research estimates

(ii) Sector-wise analysis – sectors currently performing well and those expected to grow in the future

Framework based on scale, competitiveness and ability to generate employment: In Exhibit 14 , we classify sectors based on certain key parameters such as a sector's capital and labor efficiency, as well as its share in output and exports. The traditional sectors where India has done well are refined petroleum products, textiles and related products, food processing, and metal products. These sectors have attained scale and good export performance and are less labor-intensive (excluding textiles). Further, India has seen an improvement in sectors such as autos and pharmaceuticals, which have grown in scale and exportability and are also less labor-intensive.

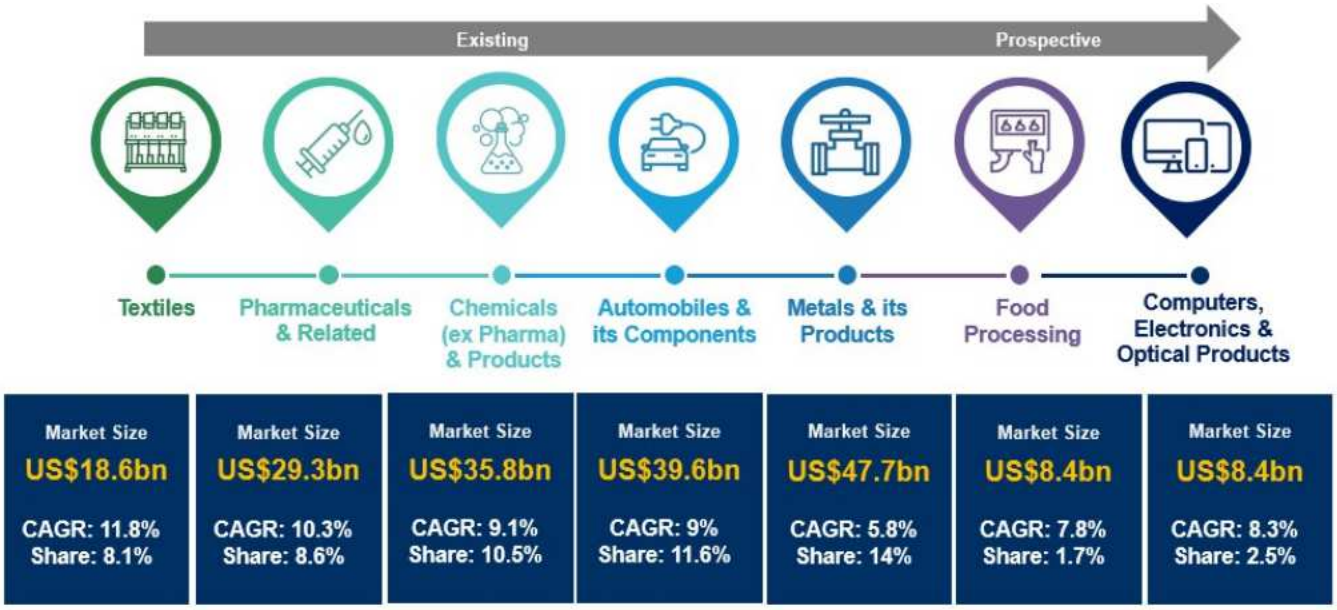
Electronics and food processing should get policy focus: We believe policy makers have to balance between traditional core competencies such as textiles and emerging sectors such as electronics to ensure India doesn't miss new growth avenues in the next decade. As such, with policy support we expect a rise in the share of electronics and related products and food processing (ex tobacco) – both of which have seen a decline in the last 10 years. Further, we believe that sectors that have shown good growth in the past – textiles, autos, chemicals, drugs & pharma – should continue to grow their share at a steady pace. Given policy makers will need to use limited resources judiciously and at the same time ensure that India moves up the value chain in manufacturing, we expect a continued focus on small but emerging sectors through targeted policies such as production-linked incentive schemes.

Exhibit 37: Segment-wise top performing industries



Source: CSO, Morgan Stanley Research

Exhibit 38: Snapshot of existing and targeted industries



Source: CSO, CMIE, Morgan Stanley Research. Note: Market size is as of F21 and CAGR is for F2012-2021. Share is the share of respective sectors in manufacturing GVA

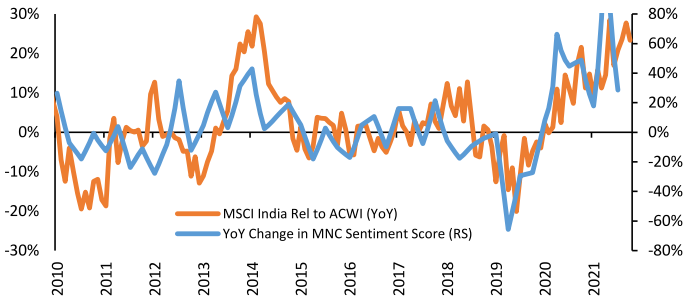
What is the MNC Sentiment Index? Our machine-powered Multinational Corporation (MNC) Sentiment Index gives real-time feedback on how MNCs are judging business conditions in India. The India MNC Sentiment Index tracks quarterly results transcripts from companies in major global indices and scores the sentiment of management commentary, based on a proprietary machine-learning program. Our data go back to 2010, allowing us to put recent scores into a longer-term perspective.

An important proprietary indicator: India's policy work around lifting corporate profits and boosting manufacturing and FDI in the context of a multipolar world is likely driving sentiment higher. This is likely to result in higher investments and therefore more corporate profits. We find our MNC Sentiment Index has a strong association with FDI inflows, corporate profits, and the direction of share prices. We are buyers of industrials, financials and consumer discretionary stocks – i.e., domestic cyclicals – with a multi-year view.

MNC Sentiment Index remained high through June: The index saw a marginal decline sequentially (following a stable previous quarter) but was up 28% YoY (137% in the previous quarter) for the quarter ended June 2022 on account of a low base. While YoY growth is expected to decelerate with a rising base, a third consecutive quarter of strong MNC sentiment is noteworthy, especially given the global macro uncertainty.

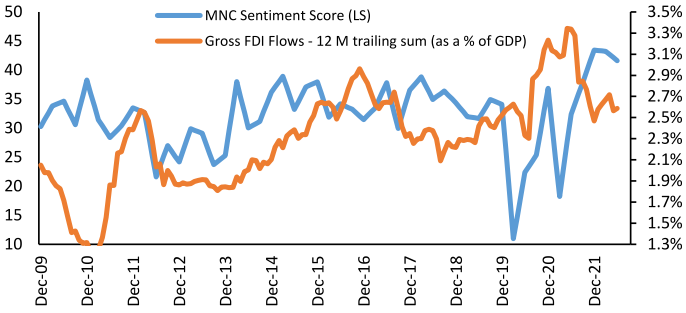
We think strong sentiment may be explained by India's improving economic growth and sustained policies to support FDI and capital spending, as well as tailwinds from global factors (our multipolar world thesis). Relative to China, where we run a similar index, India continued to outperform for the fourth consecutive quarter even as sentiment toward China recovered from an all-time low.

Exhibit 39: Changes in MNC Sentiment Index correlate to changes in share prices



Source: RIMES, MSCI, Refinitiv, AlphaWise, Morgan Stanley Research

Exhibit 40: MNC Sentiment Index vs FDI flows



Source: CEIC, RIMES, MSCI, Refinitiv, AlphaWise, Morgan Stanley Research

Largest PLI scheme worth US$10bn for semiconductors & display manufacturing

In December 2021 the Indian government approved a production-linked incentive scheme to support semiconductor and display manufacturing, with an outlay of Rs760bn. The investment target is Rs1.7trn over the next six years. Production and exports of Rs9.6trn and Rs5.15trn, respectively, are targeted over the next 20 years. The scheme will provide capital support and production incentives and encourage technological collaboration. The scheme targets supporting four large fabs, 40 smaller units and 100 design companies. Fabs would get 50% capex support, and an innovative method of providing incentives is planned for design companies. The government will work with states to provide infrastructure including pure water, 24/7 electricity, and access to specialized gases and chemicals. To drive a sustainable semiconductor and display ecosystem over the longer term, a specialized and independent 'India Semiconductor Mission' will be set up.

Defense – Strong thrust toward local manufacturing

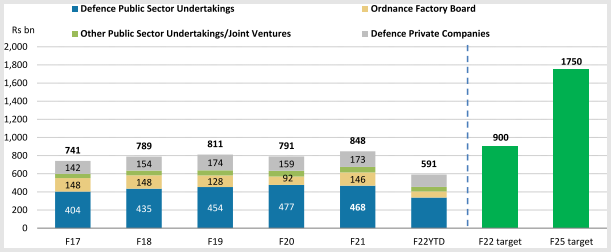
The government has plans to procure Rs5trn of military equipment domestically over the next five years. It is currently also reviewing all 'Buy Global' (termed by the government) products for indigenization. The target is to reach zero imports, and 90% of equipment approvals over the last two years have been for 'Make in India' products.

By F25, defense production and export targets are Rs1.75trn (20% CAGR, F21-25) and Rs350bn (43% CAGR) respectively.

In Aug-20, May-21 and Apr-22, the Ministry of Defence (MoD) released a list of 101, 108 and 101 items of defense equipment which were banned from import. This cumulative opportunity is worth Rs5.6trn over F20-28 (link). Further, in Dec-21, MoD approved a positive indigenization list of sub-systems/ assemblies/ sub-assemblies/ components to achieve self-reliance in defense and reduce imports by R30bn p.a. (link).

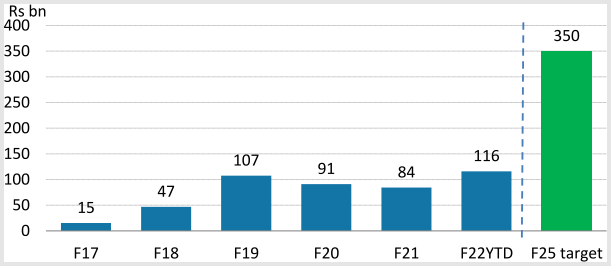
From a macro perspective, India is the third-largest military spender in the world, with its defense budget accounting for 2.6% of GDP. In 2021 India was the second-largest arms importer with a share of 17.2% of global arms imports. Progress on domestic production of arms and defense equipment and the push for exports will help to reduce the defense sector's trade imbalance.

Exhibit **41:** F25 defense production target: Rs1.75trn



Source: Ministry of Defence, Morgan Stanley Research

Exhibit **42:** F25 defense export target: Rs350bn



Source: Ministry of Defence, Morgan Stanley Research

#2: Exports

India's export market share remains lacklustre…: India's export market share for goods and services has risen to 2.2% in 2021 from 1.8% in 2010 and 0.7% in 2000. Its merchandise export market share has risen from 0.7% in 2000 and 1.5% in 2010 but has since been lackluster, remaining within a 1.6-1.7% range. In contrast, India's services export market share improved from 3.0% in 2010 to 3.5% in 2019 and further to 4.0% in 2020 and 2021, the WTO estimates. Notwithstanding the jump in services market share, the overall export market share remains subpar, as it hovers between 2% and 2.1%, with a marginal uptick to 2.2% in 2021.

…as market share gains in goods exports have been limited…: India's market share in world merchandise exports has grown at a snail's pace, from 0.4% in 1980 to 0.7% in 2000 to an all-time high of 1.71% in 2019, then declining to 1.57% in 2020 as the pandemic created supply-side disruptions. However, it hit a new high of 1.77% in 2021, supported by robust global demand. To be sure, India's share of global merchandise exports has remained rangebound at 1.6-1.7%, generating just a 2% CAGR in 2010-20 (vs 18.2% in 2000-10).

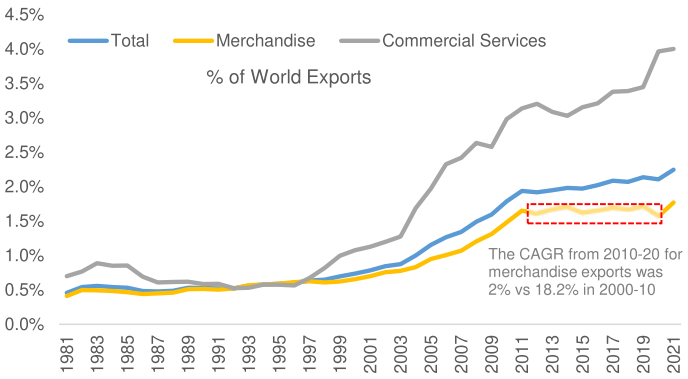
…especially compared to trends in key EMs: The success of Asian economies such as Japan and the four Asian tigers (Hong Kong, Singapore, South Korea, Taiwan) bears testimony to the efficacy of an outward orientation as a strategy for achieving economic development. The growth of exports encourages capital formation, and thus has a stimulating effect on the growth of total factor productivity. Indeed, in 2021 China's export market share was the highest at 15.1%, up from 3.9% in 2000. Further, in the past decade in the AXJ region, the export market share of Vietnam and China has risen while that of other countries, including India, has been largely static.

India's export market share compares poorly with most EMs, especially given India's favorable working-age population: Although India's share of the global working-age population is high at 18.5%, its share of global goods exports remains low at 1.9%, which suggests it is not fully capitalizing on its growing labor force. In contrast, China, which also has a high share (19.6%) of the global working-age population, has a much higher share of global goods exports at 15.1%. Other Asian economies, such as Japan and Korea, which account for much smaller proportions of the global working-age population, at 1.4% and 0.7%, respectively, have export market shares of 3.7% and 2.9%.

Services exports a bright spot for India: India's market share in services exports reached 4% in 2021 from 3.4% in 2019 and 3% in 2010. Indeed, the 4x rise in services export market share means that India now ranks 8th globally as of 2021. Further, as a percentage of GDP, services exports were at 7.7% in 2020 vs. 6.1% in 2004, and hit a peak of 8.9% in 2008. In terms of share, half of services exports are in the telecommunications, computing, and information services segment, followed by other business services, transport, and travel. The encouraging trend has been led by a broad-based improvement across services. Computer services comprise about a third of India's total service exports, the share of which has remained steady over the past ten years even as it grew at half (5.4%) the growth rate of world computer service exports (10.9%) on a compound annual basis. Other business services recorded the most meaningful pickup, as their share in India's total commercial services exports increased to 38.5% in 2020 from 29.6% in 2010. Among other services that have reported an increase in share of world exports are services related to transport, construction, and telecoms.

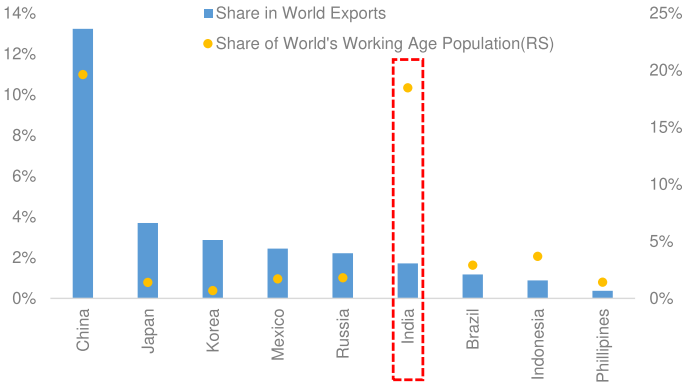
India's market share gains in services exports have risen since the pandemic: An analysis of emerging and developing nations shows that the share of commercial exports declined for all countries except India and China from 2010 to 2020. Further, in 2022, India's market share in services exports increased to 4.3% from 3.4% in 2019, indicating India was a beneficiary of the pandemic-related shift to remote working. We believe this trend has given India's services exports another push, as they grew 15.7% in 2021 vs. -4.4% in 2020 and 8.3% in 2019 (pre-pandemic).

Exhibit 43: Growth in commercial services outperforms merchandise exports



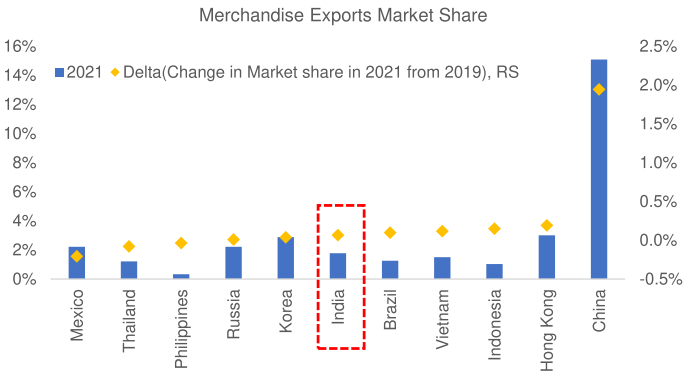
Source: WTO, Morgan Stanley Research
Note: Data for Commercial Service Exports for 2021 is based on WTO estimates using quarterly data.

Exhibit 44: Share of world exports vs working-age population



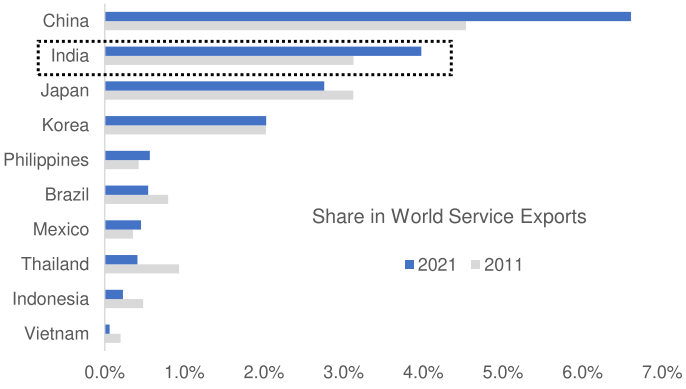
Source: UN Population Database, WTO, Morgan Stanley Research

Exhibit 45: India has gained 0.1% market share in 2021 vs 2019



Source: WTO, Morgan Stanley Research

Exhibit 46: Market share of services exports



Source: WTO, Morgan Stanley Research

Sector-wise export trend

India's export mix has progressively diversified: The export basket mix has seen slow-paced diversification and a gradual improvement in skill intensity. Indeed, in the past 10 years, the share of engineering goods, drugs and pharma, and chemicals has risen, while that of gems & jewelry, ready-made garments, and petroleum products has reduced. As such, the share of high-skilled manufacturing exports (electronics, engineering [capital goods, autos], and pharma) had risen to 38.6% in 2020 (vs 26.9% in 2009), while that of low-skilled manufactured goods (textiles, ready-made garments, gems & jewelry) has decelerated to 19.1% (vs 28% in 2009).

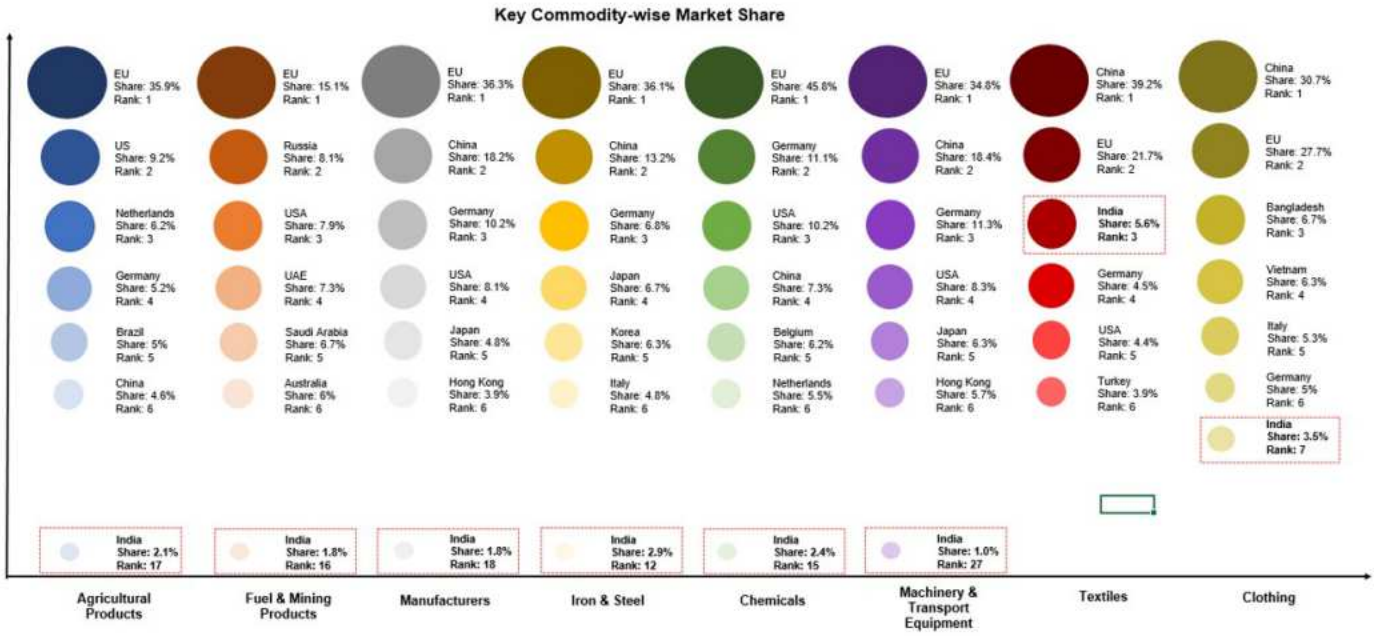
Thus, the export basket has diversified from 2009, when engineering goods were only 18.8% of exports, and textiles, gems & jewelry, and agricultural products accounted for 36.2%. Agricultural exports accounted for 11.4% of total exports in 2020, up from 8.2% in 2009. Between 2009 and 2020, marine products registered the most notable increase, from 1.2% to 2.1%, followed by rice, from 1.3% to 3.0%. Spices and dairy products are the other categories to record an improvement, albeit lower, while the share of other cereals and oil meals decelerated over the time period.

Share of electronic and engineering exports has risen… : Electronics has been a bright spot for India as its exports have risen and its imports have fallen. Electronic exports increased at a 13.2% CAGR in 2015-2020, with the segment's share of total exports rising from 2.3% to 3.8%. Further, engineering goods have also seen a share rise, to 26.4% in 2020 (23.6% in 2015), with growth of 4.4% in the past five years.

…while share of textiles and garments has fallen: Within textiles and its products, India's share of ready-made garments decreased from 6.0% in 2009 to 4.2% in 2020 as Bangladesh and Vietnam quickly emerged as textile exporters. India's share of cotton yarn, fabrics and handloom products inched up from 3.0% in F10 to 3.9% in F16, then decelerated to 3.4% in 2020.

Market share trend has remained muted: As we have noted above, India's goods market share trend has been muted, seeing only a marginal increase, to 1.77% in 2021 from 1.7% in 2019 (and then decelerating to 1.6% in 2020 as a consequence of pandemic disruptions) from 1.5% in 2010. Indeed, apart from exports of clothing and textiles, where India ranks in the global top 10, in all other sub-segments (including agricultural exports), India's rank is between 12 and 27. To be sure, India's share of manufactured goods exports has risen from 1.4% in 2010 to 1.8% in 2019, on broad-based improvements, but this remains much lower than peers like China (18%), Taiwan (2.4%), Korea (3.7%), and Mexico (2.8%).

Exhibit 47: Assessing India's performance in key merchandise exports



Source: WTO, Morgan Stanley Research
Note: Sector-wise data for 2021 is not yet available. Hence, we take data as of 2019 to avoid pandemic-related disruptions in 2020 data

Outlook for export market share

(i) Export market share to more than double to 4.5% by 2031 from 2.2% in 2021

We believe that India's medium-term growth trend will be supported by the interplay of the structurally positive factors of demographics (strong growth in the working-age population), reforms (that can help improve productivity), and the spillover benefits of the transition to a multipolar world accelerating productive job opportunities, incomes and savings. We believe that policy makers' focus on improving domestic competitiveness and manufacturing-led growth implies a slow and steady rise in exports as a share of GDP, as well as in India's share of global exports. We also expect this to result in a higher share of manufacturing in GDP.

Further, India is well suited to benefit from the increase in services-led export momentum as it extracts export market share gains, having demonstrated strong performance both before and during the pandemic.

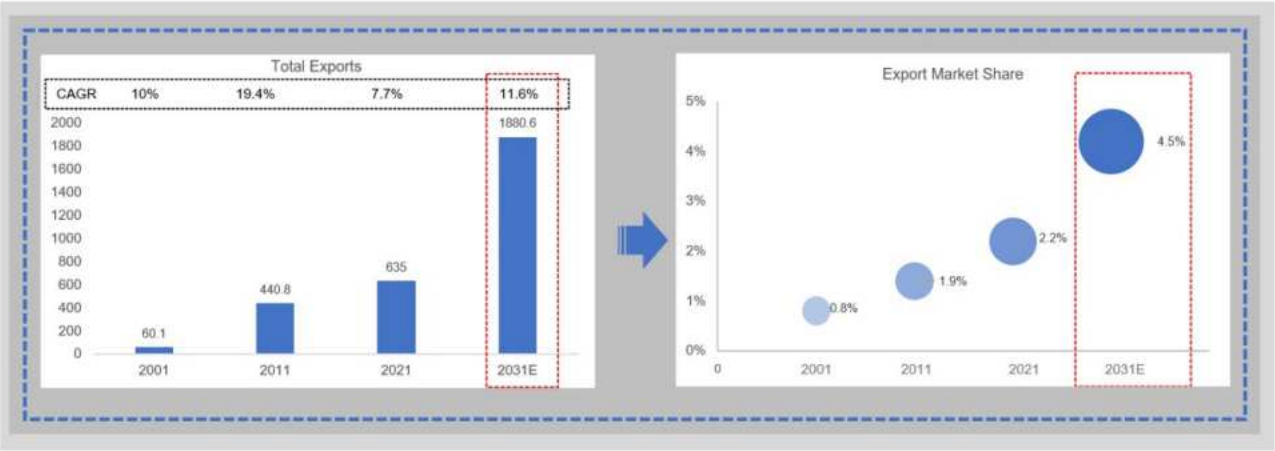
In our base case, we assume a stable political environment that is conducive to a steady pace of policy reform implementation. These reforms will encourage private sector investment, creating a platform to utilize the country's demographic potential and lay the foundations for real GDP growth to move higher, to an annual average of 6.5% over the next 10 years.

India's export market share could rise more than 2x by 2031: We estimate that India's export market share can rise to 4.5% by 2031 from 2.2% in 2021. This is based on the assumption that India's exports rise at an 11.6% CAGR over the next 10 years, above the 7.7% rate of the previous 10 years (excluding the pandemic). However, this is below the growth rate during 2000-10, when exports rose at a 19.4% CAGR. This implies that the export pie will rise to US$1,881bn. We note that the rise in exports to GDP is still slower when compared with the pace of increase in East Asian economies during their industrialization phases. This is because the global growth environment India is now operating in is different from when East Asian economies focused on export-led industrialization. We believe India will need to focus more on improving competitiveness and productivity so that it can tap into global growth.

Revealed comparative advantage for India has seen an expansion from traditional to more skilled exports: The Revealed Comparative Advantage is defined as the ratio of the share of a country's total exports of the commodity of interest in its total exports to the share of world exports of the same commodity in total world exports. The RCA takes a value between 0 and (infinity), with an RCA greater than 1 indicating that the country has a comparative advantage in export of that segment. India's traditional or labor-intensive exports of textiles, agriculture products, gems & jewelry have consistently exhibited RCA >1. However, there has been an expansion of comparative advantage with diversification of export basket as exports of pharmaceutical products, chemicals, iron & steel and mineral oils also show an RCA of greater than 1. The same is evident in India's export market share, which has seen an increase in segments such as machinery, electrical machinery, mineral fuels, vehicles and pharmaceuticals.

Segments that have potential and are showing some breakthroughs: We use the RCA analysis (i.e., RCA less than 1) and share in world imports (i.e., potential market of exports) to look at segments that can be potential winners in the next few years. Our analysis shows that segments such as mineral fuels, pharmaceutical products, precious and semi-precious stones and chemicals can potentially be areas of focus. This can help diversify the export basket and reduce import dependence.

Exhibit 48: India's export share to more than double to 4.5% by 2031



Source: Morgan Stanley Research

#3: Infrastructure

Key measures to ramp up infrastructure

Infrastructure forms the bedrock of sustained growth in an economy due to its backward and forward linkages to other sectors of the economy and ability to efficiently integrate local and global markets. India's government has recently expedited policies and reforms to promote investment-driven growth and thus eliminate the existing infrastructure deficit to foster ease of living and doing business. The government is directing efforts at synchronizing the confluence of its recently launched National Infrastructure Pipeline (NIP), PM Gati Shakti, and Development Finance Institution (now called National Bank for Infrastructure Financing & Development [NaBFID]) in an effort to lift investment-led growth.

National Infrastructure Pipeline – The government is introducing broad-based sectoral reforms to modernize infrastructure through its National Infrastructure Pipeline. This requires India to double its annual infrastructure investment for five years up to F25. This is crucial due to the large multiplier effect of investment in infrastructure for real GDP growth. Currently, 23 sectors across 18 states have been identified for green- and brownfield investments.

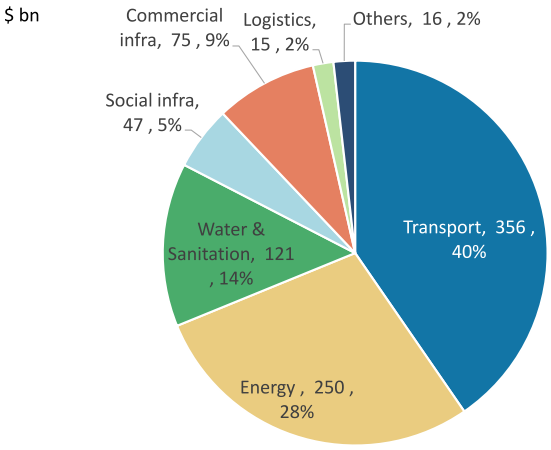
In addition, policy makers also plan to focus on last-mile connectivity, such as linking ports to the rail network. However, we believe further reforms are needed to remove supply bottlenecks and improve port and airport capacity, inland roads and railway lines to ports, and warehousing facilities to handle export cargo.

Exhibit 49: India infrastructure targets

Sector	Units	Now	Target	Year
Roadways				
National Highways	km	146,000	200,000	2027
Railways				
Dedicated Freight Corridor	km	1,100	8,657	2051
Modal Rail Freight Share	%	27%	45%	2051
High Speed Rail	km	-	7,987	2051
Track Electrification	%	80.2%	100%	2024
Ports				
Major Port capacity	MMTPA	1,282	1759	2025
Urban Transportation				
Metro	km	710	3,759	2027
Airports	Nos	141	200	2026
Other Infra				
Inland waterways	Nos	10	26	2025
National Waterways - Cargo	mn MT	74	95	2025
Renewable	GW	111	500	2030

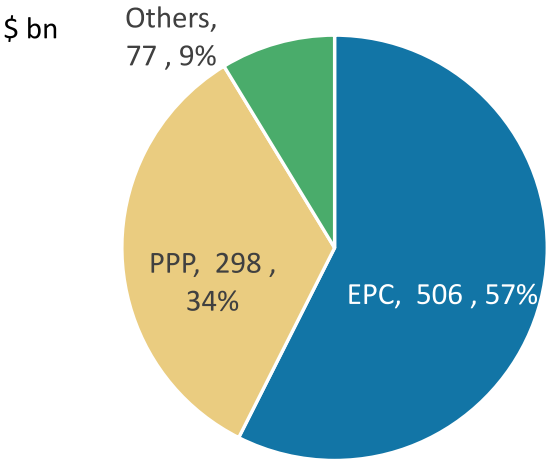
Source: PIB, media articles, Morgan Stanley Research

Exhibit 50: NIP – TAM of about US$900bn (Aug-22)



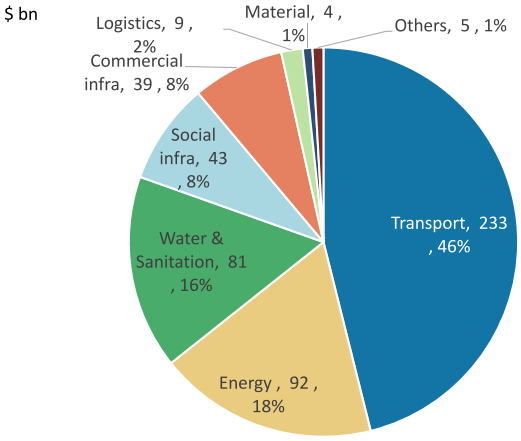
Source: Invest India, Morgan Stanley Research.

Exhibit 51: NIP – EPC 57%, followed by PPP (Aug-22)



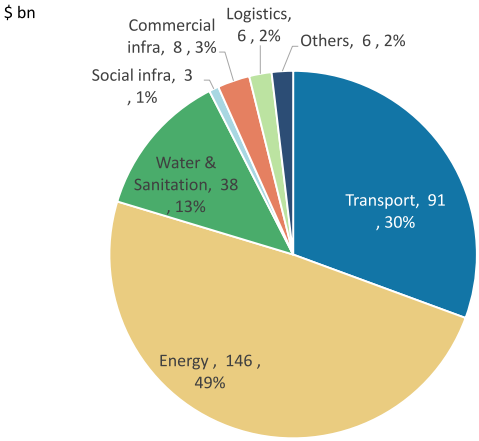
Source: Invest India, Morgan Stanley Research

Exhibit 52: NIP – EPC: opportunities across sectors (Aug-22)



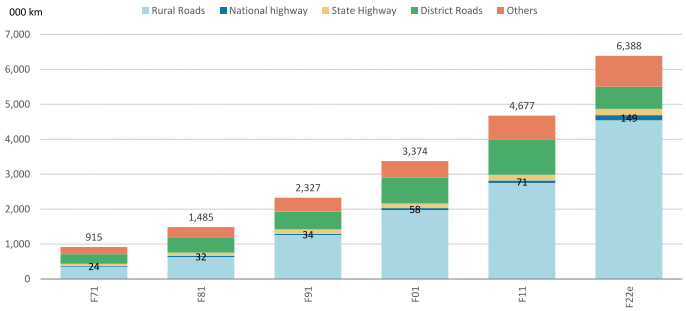
Source: Invest India, Morgan Stanley Research

Exhibit 53: NIP – PPP: opportunities across sectors (Aug-22)



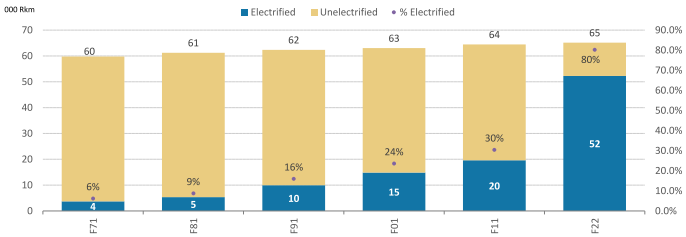
Source: Invest India, Morgan Stanley Research

Exhibit 54: India: Road sector has seen continued investment in expansion



Source: MoRTH, Morgan Stanley Research

Exhibit 55: India: Railway electrification has reached 80% of route kilometers



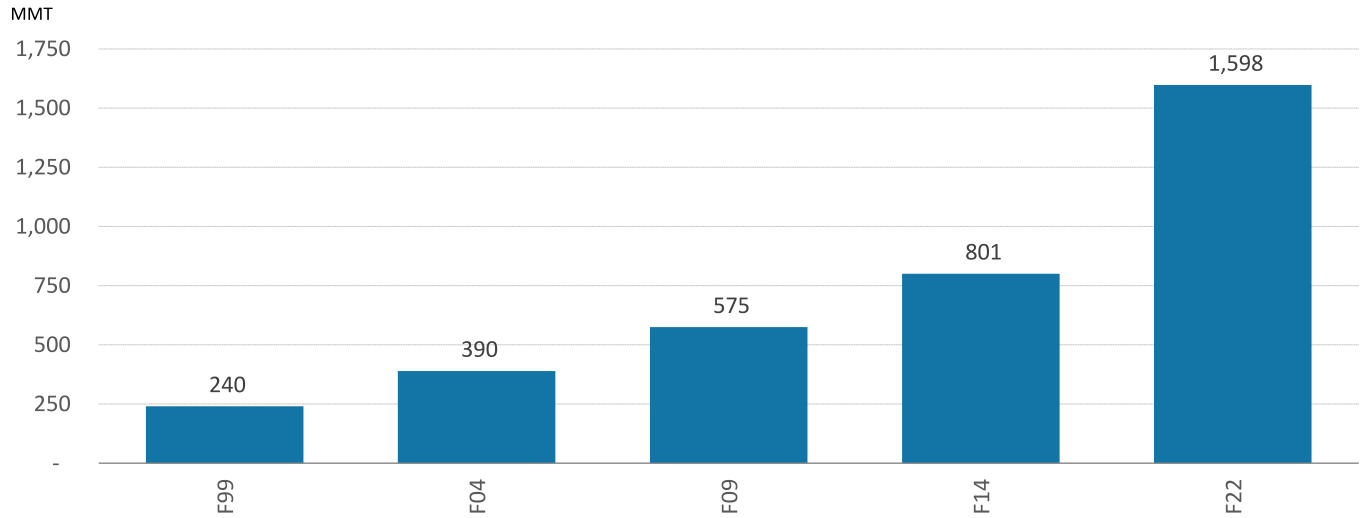
Source: Ministry of Railways, Morgan Stanley Research

Roads: India's National Highway (NH) road length is estimated at 146,000km as of Mar-2022, where 23% were four-lane roads or above, 49% are two-lane roads, and the rest are roads with less than two lanes. NH construction is through EPC, BOT and HAM, with a majority in recent years being awarded through EPC and HAM while NHAI retains the tolling rights. The Gati Shakti program has consolidated a list of 81 high-impact projects and road projects emerged as a top priority. Gati Shakti aims at a faster, digitized project approval process.

Railways: Indian Railways (IR) is the fourth-largest railway network in the world by size, with 121,407km of total track over a 67,368km route. IR owns >7,000 stations, operates >13,000 passenger trains and has access to a dedicated freight corridor of 2,800km. The Gati Shakti Multi-Modal Cargo Terminal (GCT) policy was launched in Dec-21 to boost private sector investment, and it targets to commission 100 GCTs by F25. IR is looking to attract private investment in general-purpose wagons, special-purpose/high-capacity wagons, and automobile carrier wagons. National Rail Plan (NRP) 2030 provided a detailed asset-level plan for the development of the railway sector. NIP envisages capex of Rs13.7trn over F22-25, of which Rs1.6trn is targeted through the PPP mode. NRP targets an increase in the modal share (freight) of railways from 26% to 45% over the next 30 years, as well as providing strong passenger train service.

1. **DFC:** Presently construction of two Dedicated Freight Corridors (DFC) viz. Eastern (EDFC) and Western (WDFC) and commissioning of 1,110km/2,843km has been completed. The railways ministry has sanctioned survey/preparation of the Detailed Project Report for three additional DFCs viz. East-Coast Corridor, East-West Corridor and North-South Sub-corridor.
2. **HSR:** IR proposes to build a high-speed rail network spanning 7,500km (seven projects) to meet growing passenger demand and optimize high-speed rail connectivity between major cities.

Exhibit 56: Major port capacity has expanded >5x over the last two decades. In addition, India had 1,224MMT of capacity at minor ports as of F22 (vs 599MMT in F14).



Source: Ministry of Shipping, Morgan Stanley Research. Minor port capacity: F14: 599MMT, F16: 738MMT, F19: 864MMT, F20: 988MMT, F21: 1002MMT, F22: 1224MT. Note: Major ports are under the administrative control of Ministry of Shipping; minor ports are under the jurisdiction of the respective State Maritime Board/State Government

Ports: India has 12 major and 200+ minor ports along its 7,500km coastline, as well as a vast network of navigable waterways. The total capacity of major ports is 1,598MMTPA (Mar-22). The government's Sagarmala program has four key components, namely port connectivity (52%), port modernization (25%), new port development (22%), and coastal community development (1%). More than 800 projects worth Rs5.5trn have been identified for implementation.

Airports: India is the third-largest domestic civil aviation market in the world and has strong growth potential. Airports Authority of India (AAI) manages 153 airports (29 international, 10 customs and 114 domestic airports). AAI airports handled 189mn passengers in F22 (international: 22mn; domestic: 166.8mn). PPPs in major airports such as Delhi and Mumbai have contributed significantly in pushing the aviation sector ahead. In F21, six AAI airports were leased out to the private sector on PPP, namely, Ahmedabad, Lucknow, Mangalore, Guwahati, Jaipur, and Thiruvananthapuram. Under NIP, airport capex is pegged at Rs90bn to scale up passenger handling capacity. For this, a number of projects for construction of new terminals, runways, taxiways, and parking facilities are being undertaken.

Inland waterways: Maritime India Vision 2030 (MIV 2030) is a ten-year blueprint for the sector with an aim to boost waterways, give a fillip to the shipbuilding industry, and encourage cruise tourism in India. Under the MIV, capacity addition by major ports is 423MTPA for an investment of Rs334bn; of which PPP would account for 95%. To promote inland water transport (IWT), 111 National Waterways (NWs) (including 5 existing and 106 new) were declared under the National Waterways Act, 2016. Development activities have been initiated in the first 13 of the 26 viable NWs.

Warehousing: The central government, through FCI (Food Corporation of India), has assumed responsibility for the procurement, storage, transportation, and bulk allocation of food grains to the state governments, for eventual distribution to beneficiaries through the public distribution system. Existing storage capacity with FCI and others was 75.5MMT as of Mar-20. FCI's storage capacity (54% of total) is in turn 30% owned and 70% hired (through central and state warehousing corporations and the private sector). CWC operates 422 warehouses and 10.97MMT capacity. This includes custom bonded warehouses, container freight stations, inland clearance depots, air cargo complexes, etc.

Infrastructure financing: Outside the Budget

#1: Development Financial Institution

1. Under the Development Financial Institution (DFI), fresh funding of Rs5trn is being targeted in the next three years. We see this as a significant development if executed well.
2. The setting-up of DFI not only highlights the government's continued infrastructure thrust but, more importantly, creates a vehicle for sovereign funds to earn reasonable yields (independent board).
3. Sovereign funds hitherto participated in infrastructure projects in India across metro, water and high-speed rail with the central and state governments. Recently, they have been offered tax incentives on investments made over next three years.
4. The initial capital infusion for DFI will be Rs200bn, split equally over two years. The target is to raise Rs3trn from the market and fund capex of Rs5trn in the next three years. An additional grant of Rs50bn is provided for tax exemptions over the next 10 years to attract investor interest. Initially, the entity will be wholly government-owned, but its stake will be gradually reduced to 26%.
5. The board will be independent and professionally run, with powers to remove full-time directors. Board composition will include 50% non-official directors.
6. The key difference is DFI will source funds from large developmental funds, which would also bring down borrowing costs. Sources will include institutions across insurance, pensions and sovereign wealth funds, as against funding from commercial market as done by earlier funding institutions.
7. Earlier institutions issued bonds, which were treated as Statutory Liquidity Ratio (SLR) and banks had to deposit funds (20-25%) – a requirement that was later removed. The government also used to provide tax-free status to boost sourcing.

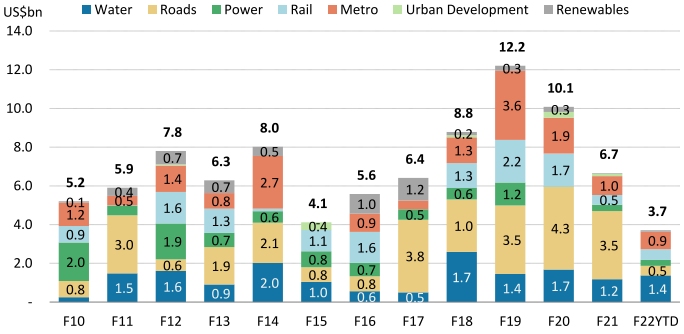
To provide low-cost infrastructure financing to supplement the realization of the government's Aatmabharat Abhiyan, the Cabinet approved the setting-up of NaBFID in Mar-21. Besides funding long-gestation industrial initiatives, the institution is also mandated to provide funds to finance rural infrastructure and thus forms a landmark step in providing a fillip to public capex. In Oct-21, the government appointed KV Kamath as the first chairperson of the institution, to a three-year tenure, which is likely to start its lending operations in 1QF23, with the underlying agenda of meeting the financing needs of projects under NIP while also remaining open to provide resources to other projects.

Coordinated efforts by the central and state governments for development of overall infrastructure are likely to prove beneficial. The Department of Commerce is seeking to attract private sector participation in its ongoing efforts to develop the National Single Window Logistics Portal, which is to be integrated with the Unified Logistic Interface Platform (ULIP) to reduce logistics costs to a high single digit (8% of GDP) by 2030, in line with levels in other developing countries. ULIP seeks to integrate about 24 digital systems of six ministries to standardize procedures and processes for seamless trade, real-time monitoring of cargo movements, and ensure end-to-end encryption of data to maintain confidentiality, thereby allowing a comprehensive reduction in logistics costs.

#2: Multilateral funding

Prior to Covid, based on our bottom-up work, multiple sovereign wealth funds and multilateral agencies had funded a variety of Indian infrastructure projects. However, momentum slowed after the outbreak. More recently, the Indian government under the budget proposals has provided 100% tax exemption (on interest, dividends and capital gains) on income earned by sovereign wealth funds and multilateral agencies for investments in infra projects. We believe this incentive will kick-start an investment cycle by sovereign wealth funds and multilateral agencies.

Exhibit 57: Outside the Budget: Multilateral funding has helped infra projects; momentum should improve with fiscal incentives being offered

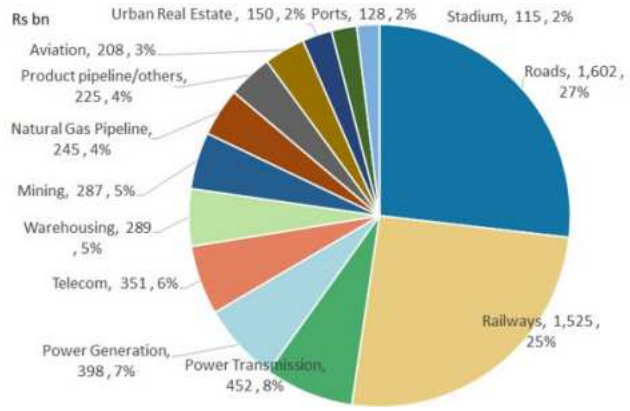


Source: World Bank, JICA, NDB, KfW, EIB, AIIB, AFD, Morgan Stanley Research

#3: National Monetization Pipeline

The Indian government launched the Rs6trn National Monetization Pipeline (NMP) in Aug-21. Its objective is to monetize core infrastructure assets across about 20 sub-sectors over a four-year period (F22-25). The top five sectors account for 83% of the pipeline, with roads accounting for 27%. The government executed transactions worth Rs960bn under NMP in F22 (target: Rs880bn).

Exhibit 58: India infrastructure funding: National Monetization Pipeline



Source: Ministry of Finance, Morgan Stanley Research

#4: Government's facilitative policy measures

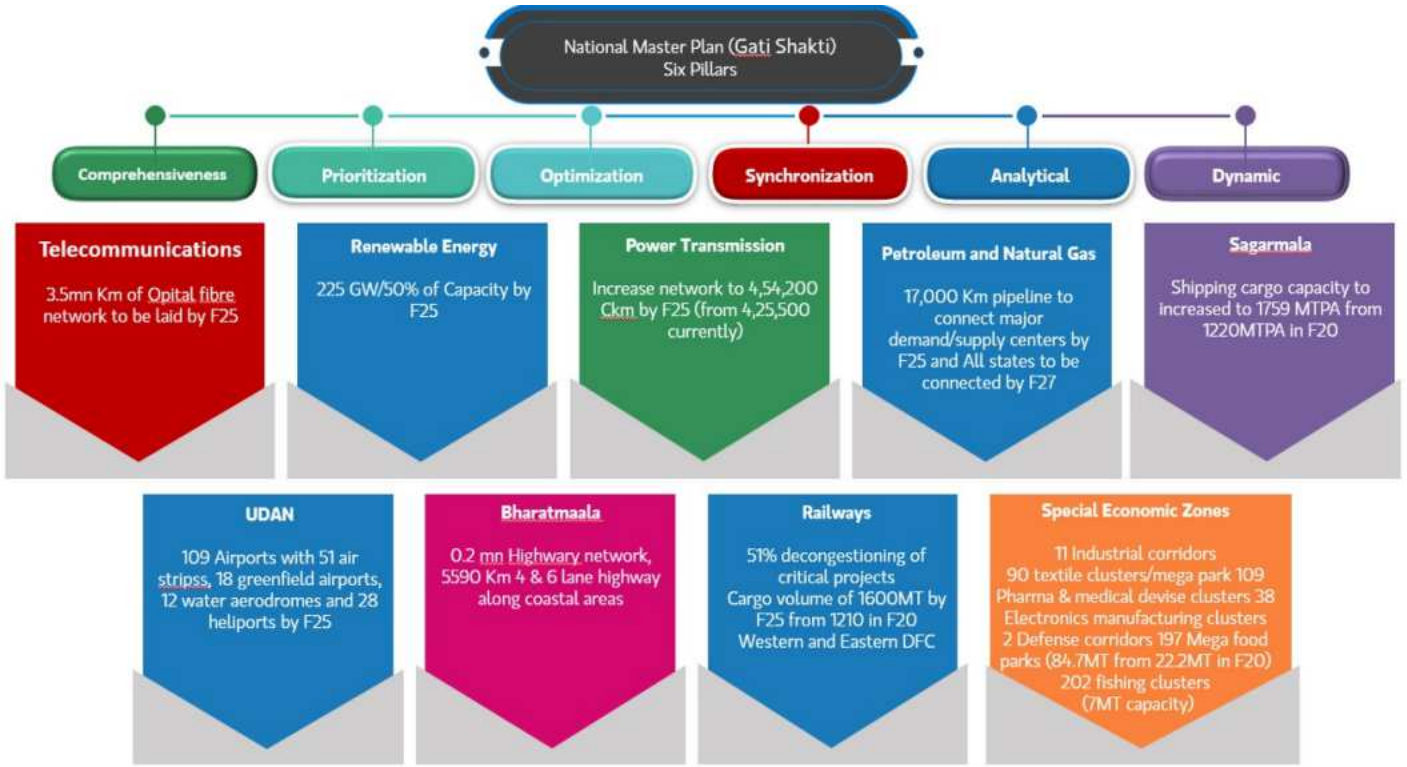
The government's commitment to better physical infrastructure is exhibited not only through detailed plans to augment spending but also mechanisms to monitor and fast-track implementation of the plans.

PM Gati Shakti: While the intent of the NIP is to build world-class infrastructure by inviting government and private investment, PM Gati Shakti aims at providing an integrated framework to facilitate multimodal connectivity of various infrastructure linkages, such as rail and road, to better utilize infrastructure investments and ensure greater access to domestic and international markets. PM Gati Shakti aims to achieve the target of a US$5trn economy with enhanced infrastructure and efficient logistics through seamless multimodal transport. The National Logistics Policy 2022 is the next step, as it will provide a comprehensive agenda for the development of the entire logistics ecosystem and will support the PM Gati Shakti initiative.

National Logistics Policy: As part of its initiative to reduce logistics costs, the government released the National Logistics Policy in September 2022. The new policy aims to provide comprehensive development of a logistics ecosystem, which is technologically enabled, integrated, cost-efficient, resilient, sustainable, and trusted. The policy aims to ensure quick last-mile delivery, solve end transport-related challenges, save manufacturers' time & costs, as well as prevent wastage of agricultural products, etc. An integrated network should also end silos between multiple departments.

The policy will be implemented through a Comprehensive Logistics Action Plan (CLAP) with eight key focus areas: 1) Integrated Digital Logistics Systems, 2) Standardisation of physical assets and benchmarking service quality standards, 3) Logistics Human Resources Development and Capacity Building, 4) State Engagement, 5) EXIM (Export-Import) Logistics, 6) Service Improvement framework, 7) Sectoral Plan for Efficient Logistics, and 8) Facilitation of Development of Logistics Parks. By 2030 the policy aims to: a) reduce India's logistics costs to about 8% of GDP, down from 13-14% currently; b) place India among the top 25 countries in the World Bank's logistics performance index; and c) improve efficiency by creating a data-driven support system.

Exhibit 59: Gati Shakti



Source: PIB, Morgan Stanley Research

Outlook for infrastructure capex

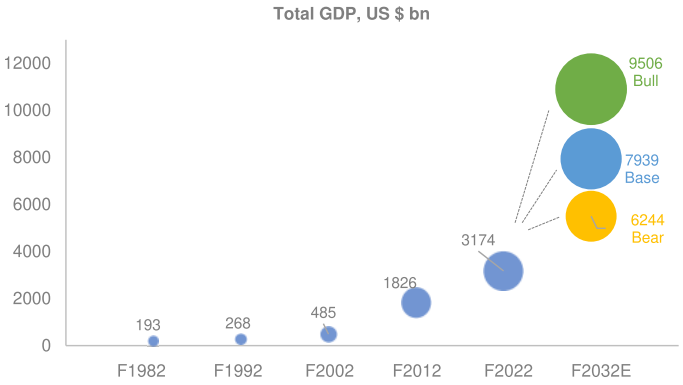
We believe the next few years will witness a higher productivity-led growth, led by an improvement in capex to GDP. Indeed, a pickup in capex is critical to the virtuous cycle of growth and employment generation. As such, and as discussed above, we are optimistic on the manufacturing and export trend, which we expect will grow meaningfully above the growth rates of the last 10 years. As such we expect real GDP growth to average around 6.5% in the next 10 years, with growth higher than 6% in the next few years. This will lead to a steady rise in capex to GDP, which we expect to increase from 31% of GDP in F22 to approximately 36% by F27 and thereafter to levels around 35-36%. We expect this increase in capex to be broad-based, driven by a pickup in private capex, improvement in household capex and sustained momentum in public capex. Within private capex we expect the delta to be driven by a) increased manufacturing capex, b) increased capex for the new energy transition, and c) increased core infrastructure capex. We project that manufacturing capex will increase from 3.8% of GDP in F21 to 7% by F32 similar to the average manufacturing capex in the decade of the 2000s. We expect infrastructure capex to increase from about 4.6% of GDP in F21 to 7-7.5% by F32, putting it above the previous peak of 6.9% in F08.

India to be the third-largest economy by the end of the decade

It took nearly 60 years for India's GDP to reach US$1trn (2007) following independence. However, a confluence of positive factors (demographics, reforms, increased integration with the global economy) have since helped it quicken the pace of growth, and we expect the economy to expand by about US$400-500bn annually over the next 10 years.

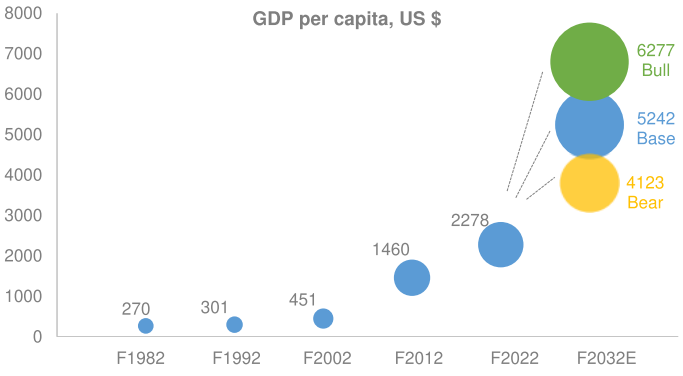
In our base case, we expect that continued policy reforms which focus on improving the investment climate will lay the foundations for India's real GDP growth to move higher to an average of 6.5% over the next 10 years. If our projections were to come to fruition, India's economy would surpass the US$7.5trn mark – a feat that has only been achieved by the US and China thus far. It would make India the third-largest economy (up from fifth currently) in the world by 2031/F32. Accordingly, by F32 India's consumption and investment opportunities would rise to US$4.6trn and US$2.7trn, respectively. Further, India's per-capita income would increase from US$2,200 currently to about US$5,200 by F32, with implications for consumption.

Exhibit 60: Total GDP



Source: CEIC, Morgan Stanley Research estimates

Exhibit 61: GDP per capita



Source: CEIC, Morgan Stanley Research estimates

What should policy makers do to ensure a continued virtuous cycle of growth?

As we highlighted earlier , we expect the next 10 years to be significantly different for the Indian economy, as we expect the growth trend to improve driven by a productive boost as the economy witnesses a changing economic structure, i.e. more production oriented with a higher share of manufacturing, exports and capex. In this context, we are aware that more work will be needed to ensure that the economy remains on this path of high productive growth. In this section, we discuss areas policy makers should continue to focus on.

#1: Factor market reforms

The future economic policy discourse requires special emphasis to address the rigidities that make the factor market sclerotic, in our view. These reforms are necessary because a) they are indispensable for production activity, and b) they can help make production cost-effective and subsequently competitive. Against this backdrop, we think the government can help further reform by undertaking adequate measures with respect to labor, land and capital to enhance their productivity.

Labor – At the central government level, we believe consolidation of existing labor laws is important to facilitate flexibility in their implementation. Additionally, reforms encompassing minimum wages, working conditions, and safety nets need to be encouraged to protect workers' interests. Further, in our view, the current practice of states taking the lead (as labor is a concurrent subject) in making changes to labor laws will continue as this creates a competitive environment for states that can help them attract investment.

Land – The process of land acquisition requires an overhaul, to eliminate complexities and avoid time and cost overruns. While the recent formation of Land Banks is a noteworthy initiative, more such measures that help utilize idle land for productive purposes could also be constructive. These should be directed at making the process of acquiring land speedy and less cumbersome by eliminating red tape and other legal hurdles. We expect states to act in reforming land acquisition rules as they have done with labor law reforms, and a few states have already done this.

The budget for F23 laid down the adoption of a unique 14-digit identification number for every parcel of land to digitise land records and adopt a uniform pan-India process for the registration of deeds and documents. Systemic land record management is pivotal for sustainable land use planning. (*Money Control*, Feb-22)

Fast-tracking the Plug-n-Play model – Against a backdrop of pandemic-disrupted economic activity, the government has taken the initiative to revive the Plug-n-Play Scheme as proposed in the 2015 Budget. This scheme ensures all regulatory clearances (a total of about 70 central and state government statutory requirements) are met even before projects are allocated, to ensure timely completion. An Empowered Group of Secretaries has been formed with the key objective of creating investment incentives. Eight strategic industries (electronics, medical devices, pharmaceuticals, autos, textiles, man-made fibres, food processing and capital goods) have been identified for which the group is to prepare standard operating procedures. The group will also look to identify companies that can invest in India, rank investment clusters and land for specific industries, and devise spatial and sector-specific policies to maximize investment. This should be appealing for foreign investors, as the model reduces capital expenditure, and thus risk, considerably. Additionally, it also seeks to restore stalled projects by providing the necessary infrastructure. The government's proactive approach in bringing about state-wise upgrades of industrial infrastructure is a welcome step in this regard, in our view.

Capital markets – The development of financial markets, especially bond markets, is crucial for making funds available for various investment projects, predominantly infrastructure projects that have the potential to spur economic growth through the multiplier effect. Long-gestation infrastructure projects require support from well-developed bond markets, as that reduces the exposure of traditional lending institutions to asset-liability mismatches.. Well-developed capital markets play a pivotal role in mobilizing savings to investments. A deepening of capital markets is thus instrumental in expanding and modernizing productive capacity that leads to sustained economic growth. Some of the measures adopted by India in this regard are: 1) setting up the National Investment and Infrastructure Fund, with a corpus of Rs200bn to provide long-term capital for infrastructure-related projects; 2) calibrated access to foreign investors through rupee-denominated off-shore bonds to diversify and expand the investor base; 3) robust regulatory environment to shield financial markets from volatility; 4) promote market autonomy; and 5) develop a macroprudential framework to aid financial stability.

#2: Skill development and incentivizing innovation and R&D

Emphasis on skill development is paramount: Per data from the UN Population Database, 67% of India's population belonged to the working-age category in 2021, making its workforce its greatest economic and social asset. Education and skills training are essential for both the existing labor force and new entrants to provide a scaffolding that reduces mismatches between demand for skilled labor and its supply. Skill development is thus an important focus area for policy makers, with the broad objective of empowering the workforce with continuously upgraded skills, knowledge and qualifications, to ensure employability in productive jobs and competitiveness of labor in international markets.

Historically, India's progress in vocational training has been poor, with data from the 68th Round of National Sample Survey Office (NSSO) for 2011-12 showing that only 4.7% of India's total workforce had undergone formal skills training, compared with 52% in the US, 68% in the UK, 75% in Germany, 80% in Japan and 96% in South Korea.

It is in this regard that the empowerment of the labor force through the attainment of skills is emerging as an important focus area for the Indian government, especially in the context of the negligible progress made so far, to leverage the demographic dividend in future years. Furthermore, it is important to align skills and training capacity with demand to avoid any job skill mismatch. Against this backdrop, the National Skill Development Council (NSDC) initiated the Skill India Mission in 2015, an umbrella scheme that covers a host of programmes designed to empower India's youth by enhancing their skill sets to internationally equivalent standards using a PPP (public-private partnership) framework. It thus acts as a facilitator to enhance the employability of the workforce. Recently, the NSDC suggested a unique financial instrument, the Skill India Impact Bond, to encourage private sector funding and transform the skills ecosystem. This aims at translating skills into paid employment, especially for women. (*Economic Times*, Nov-20)

In Jan-2021, the government achieved its target of providing short-duration skill development training and recognition of prior learning (RPL)) to unemployed youth across the country under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) (*Economic Times*, Feb-21). Further, the third tranche of the PMKVY scheme, PMKVY 3.0, was launched in the same month, to provide training to 800,000 youth in F22, by incorporating lessons learned from the previous two tranches. The government adopted the DigiSaksham programme in Sep-21, in collaboration with Microsoft, so as to impart digital literacy to the youth from rural and semi-urban areas, to keep them abreast of technical know-how, in an increasingly technologically-driven world (*PIB*, Sep-21). In the budget for F23, the Finance Minister announced the setting-up of a Digital Ecosystem for Skilling and Livelihood (DESH-Stack) e-portal to provide skills, reskilling and upskilling training online in different languages, in line with dynamic industry needs. The Digital University is to be built on a networked hub-spoke model (*PIB*, Feb-22). The most recent initiative of the government entails setting up 5000 skill hubs across India, in its first phase, to provide comprehensive skilling and vocational training to students, dropouts and those seeking employment. (*Business Today*, Mar-22).

Innovation and research are fundamental for sustainability: Additionally, we think designing policies conducive to creating an ecosystem for innovation and entrepreneurship are pivotal to ensure sustainable economic growth. Key parameters that have implications for entrepreneurial activity are: (i) social and economic infrastructure; (ii) regulatory framework; (iii) administrative and compliance costs; (iv) policies around intellectual property rights; and (v) barriers to entry and exit of firms. Consequently, reforms in these areas can assist in establishing an ecosystem that contributes substantially to wealth creation.

Directed efforts to increase LFPR: India's overall labor force participation rate (LFPR) is at 49.3%, considerably lower than China's 68.2% and Vietnam's 77.4%. The weakness in the trend observed in India is particularly led by the dismal participation rates for women, which track at 20.8%, while those for men stand at 75.9%. A greater integration of women in the labor force is important to step up the aggregate LFPR for India by encouraging reskilling and upskilling of women and ensuring more employment opportunities which allow for greater flexibility.

Government policy to focus on aligning demand and supply of labor: As highlighted previously herein, equipping the workforce with appropriate levels of education and skills-based training is a prerequisite for ensuring that India reaps the benefits of its demographic dividend. On the one hand, empowerment of the workforce is required to ensure the supply of labor is appropriately equipped; on the other hand, labor market regulations should be such that demand for labor is encouraged. In India, the track record on both fronts has been weak – skill development for existing and new entrants to the workforce has been lacking historically, and labor market regulation is viewed as rigid by the industry, though improving at a slow pace.

#3: Revamp of special economic zones and focus on coastal economic zones

India set up its first Export Processing Zone (EPZ) in 1965. In 2000, India's government formulated the Special Economic Zone (SEZ) Policy, seeking to eliminate the multiplicity of controls and clearances and provide an enabling infrastructure framework to promote economic growth. However, the performance of SEZs in India hasn't translated into robust export growth, in sharp contrast to Asian counterparts like China, Korea, Singapore, and Malaysia.

Furthermore, evaluating the limitations of SEZs, the government think-tank, Niti Aayog, has proposed the creation of Coastal Economic Zones (CEZs), which would have special economic regulation, such as tax incentives and lower tariffs, to make it friendly for industry, encourage investment, and create employment. The proposal is to create 14 CEZs, which also fits in with the government's Sagarmala plan, which focuses on the expansion and modernization of ports.

#4: Work on trade agreements – multilateral or bilateral

The underlying objective of bilateral and multilateral FTAs is to encourage symbiotic gains for the signatories through enhanced integration in global value chains. Traditionally, India is a signatory to 13 regional trade agreements/free trade agreements, the most notable being with ASEAN, South Korea and Japan. However, the utilization rate of FTAs for India is as low as 25%, because of misaligned costs and benefits and high cost of compliance. While India's import-export ratio with Korea, Japan and ASEAN has increased post their respective FTAs, there was a slight dip in F21, led by India's exports to FTA partners outpacing its exports to the rest of the world. Notwithstanding the trend observed in F21, India's trade deficit has widened with most of its FTA partners, except Sri Lanka. As such, India's engagement in FTAs has remained rather slow thus far. Categorization by sector shows a worsening trade balance for 13 out of 21 sectors, including chemicals and allied, plastics and rubber, minerals, leather, textiles, and gems & jewellery.

As such, we believe India should focus on reviving existing and signing new FTAs with regions that offer high trade complementarity with respect to its products with high export potential. We note India is attempting to reconstruct its FTAs with most nations, with special emphasis on equal access to markets and avoiding unfair trade practices. The Ministry of Commerce has begun to expedite negotiations with countries in an attempt to revamp the FTA ecosystem in the country and capitalize on the incumbent economic integration, greater market access and an increase in competition. In this view, India aims at fast-tracking FTA agreements with a few key economic regions globally, corroborating with its revamped foreign trade policy.

India's ongoing social transformation

Analyzing evolving social trends: Per data from the fifth National Family and Health Survey (NFHS), India for the first time reported 1020 women for 1000 men, reversing the 'missing women' trend observed earlier, with 927 women per 1000 men in 1990 and 943 women per 1000 men in 2011.

In addition, the fertility rate for the country as whole has decelerated from 2.7 in 2005-06 to 2.2 in 2015-16 and undercut the replacement level of fertility of 2.1 to track at 2 in 2019-21. While the total fertility rate for urban parts of the country touched 2.1 in 2005-06 and has tracked below that ever since, with a rate of 1.6 in 2019-21, rural India finally hit 2.1 in the current round from 3 in 2005-06.

On the financial inclusion front, data depicts an encouraging trend, with 79% of women having a bank account operated personally, up 35.6% from the previous survey, and 54% having mobile phones, which marks a step forward in female empowerment.

Earlier this year, Nielsen released its Bharat 2.0 study wherein it reported 20% more internet users in rural areas as compared to urban areas, with further potential for growth as 60% of the rural population was still not using it actively. Further, the growth in female users over the last two years tracked at 61%, far above 24% for male users.

What is driving recent trends? A host of factors is responsible for the recent darning of the social fabric of the country, encouraging social inclusion. The improving gender dynamics can be ascribed to better education facilities for women, improving provisions for healthcare, greater contribution to household decision-making bolstered by egalitarian mindsets leading to higher acceptance of women in mainstream society.

Rapidly improving internet penetration levels, on the other hand, are a result of the strengthening digital infrastructure, facilitated by government schemes and policies in addition to eased availability and accessibility of budget smartphones and affordability of mobile data.

The Office to the World

India's services exports will almost treble in the next 10 years to US$527bn (vs US $178bn in 2021)

We believe global enterprises' technology spending is likely to increase as a % of revenue, as highlighted by our CIO survey. This would lead to an expansion of the overall pie for the addressable IT services market.

The emergence of distributed delivery models along with tighter labor markets globally will drive increased outsourcing to India, in our view. The number of global inhouse captive centers that have opened in the last two years is almost double the number in the four years prior to that.

Barring the near-term impact of a global macro slowdown, we expect India's technology services exports to grow at a CAGR of 11.5% in the next decade, vs. 10% over the past decade. India accounted for 15% of worldwide IT services spending in 2021, and we expect this to increase to 22% by 2031.

We expect India's technology services workforce to more than double from 5.1mn in 2021 to over 12.2mn by 2031. This would help in increasing annual office absorption from 32-35msf to a run-rate of 45-50msf over the next 5-10 years.

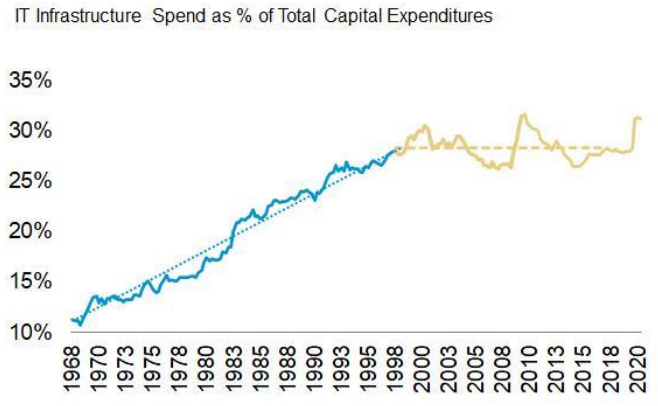
Key risks: a) The talent pool doesn't grow fast enough to keep up with demand, causing wage pressure and eroding India's competitiveness as a business destination; b) a prolonged global macro slowdown; c) automation from software bots could keep work from moving offshore – we see this as a risk to highly commoditized work within BPO and other services; Indian companies have been at the forefront of automating their own work wherever possible and to retrain and redeploy their existing staff to more productive work.

Demand drivers supporting the case for stronger growth over the next decade

Addressable pie is expanding

As per our global technology team, we are in the early innings of a new technology cycle which is centered on data that allows businesses to derive insights, improve competitive advantages, and drive structurally higher IT spend. In the 'Data Era', there is potential for accelerating IT investment after nearly two decades of underinvestment. Our global tech team believes that as the diffusion of data technologies (AI, ML, IoT, automation, digitalization) expands to more sectors outside of technology, there will be an opportunity for incremental IT investment to be double in the next 10 years vs the previous last two decades. This would mean a significant increase in the overall addressable pie as reflected in our CIO survey results, which showed an increasing number of CIOs looking to raise their technology budgets as a % of revenue. Moreover, Covid-19 accelerated the digital transformation of enterprises, as reflected in public cloud adoption trends. Even today there is a significant scope for increasing the percentage of application workloads moving to the public cloud (refer to the MS CIO survey findings). Barring near-term macro volatility (led by a slowdown in real GDP growth rates in developed markets such as the EU and US), we expect this trend to benefit India's technology services exports (which stood at US$178bn as of 2021 and grew at a 10% CAGR over the last decade). Our global technology team's view on underinvestment is echoed by the large Indian IT services vendors as well.

Exhibit 62: IT spend as a % of total capex has been above the prior 10 years' average since 2019

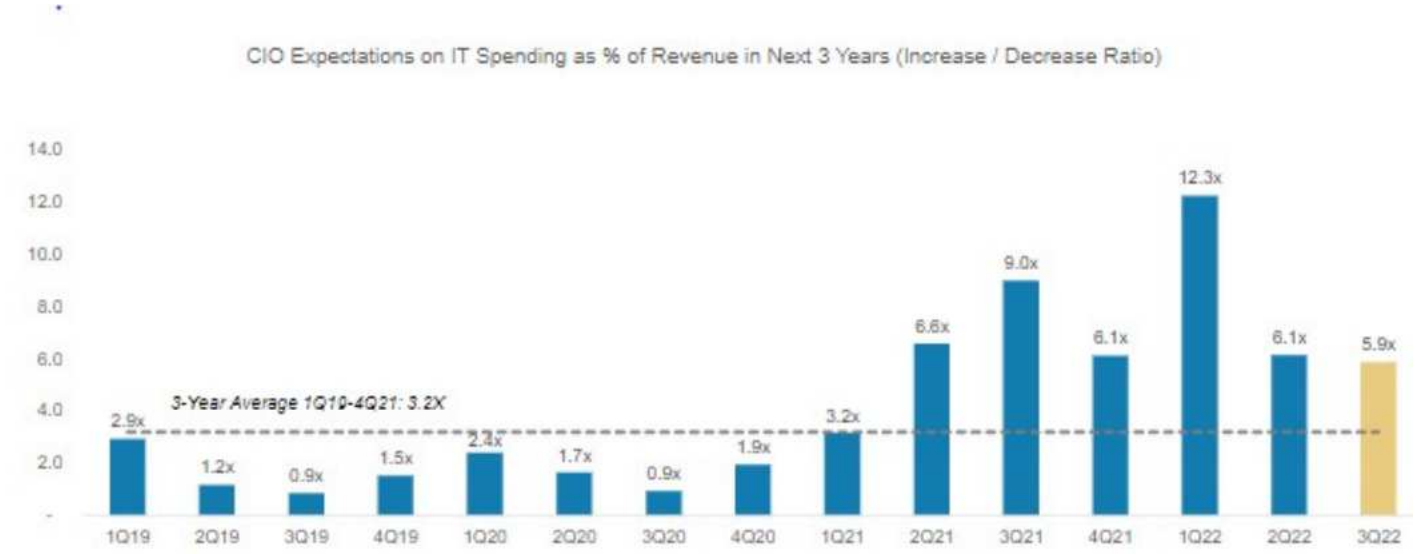


Source: St. Louis Federal Reserve, Morgan Stanley Research

Exhibit 63: US: Incremental IT spend over the next decade likely to be significantly higher than in the previous two decades

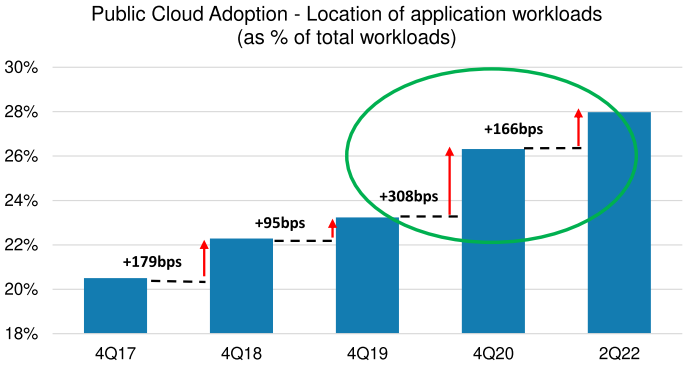
Source: Morgan Stanley Research, US Bureau of Economic Analysis data grossed for global estimates. Investment in info processing equipment & software as % of total non-residential fixed investment.

Exhibit 64: Our AlphaWise survey shows CIOs are looking to increase tech spending over the next three years



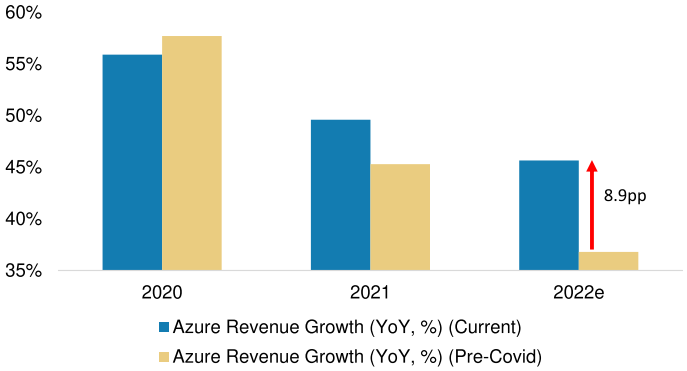
Source: AlphaWise, Morgan Stanley Research, n=100 (US and EU data)

Exhibit 65: Public cloud adoption – CIOs highlighted an uptick in the location of application workloads to the cloud



Source: AlphaWise CIO Survey (4Q20), Morgan Stanley Research

Exhibit 66: Microsoft Azure revenue growth forecasts have seen a material uptick for 2021 and 2022 (current forecasts vs pre-Covid forecasts)



Source: Company data, Morgan Stanley Research estimates

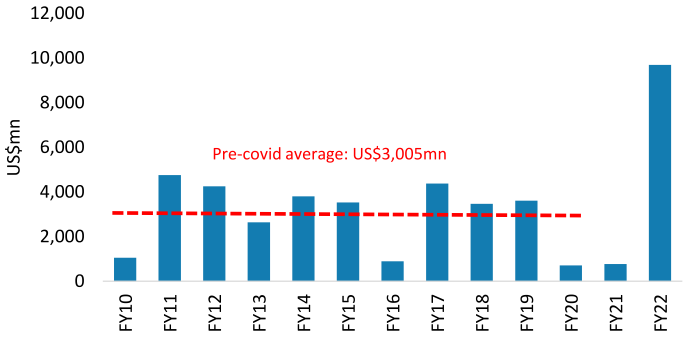
Public cloud adoption accelerated post Covid-19

Inflection point in growth seen for service providers globally

Over the past 3-4 years, large Indian IT services companies have transitioned their businesses towards fast-growing digital services, and the drag from traditional services has lessened. With relevant investments in technology, delivery and go to market (sales and marketing, solution architects, among others), we believe Indian IT companies are well positioned to participate in the digital transformation journey of enterprises. We note that large service providers such as Infosys and TCS have developed proprietary platforms and products that have played a key role in winning those deals and making the business much more sticky.

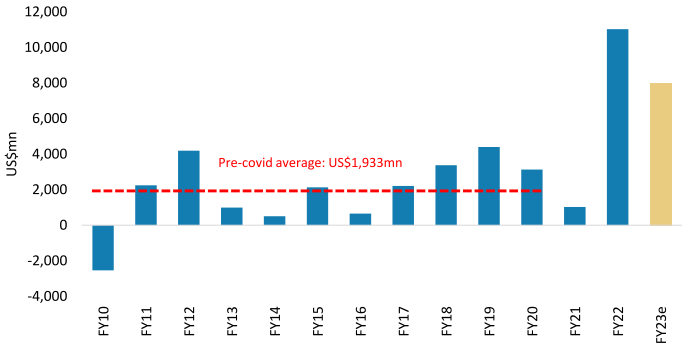
This is reflected in incremental revenue added in F22 by India IT services vendors as well as MNCs like Accenture, wherein revenue added last year (F22 revenue less F21 revenue) was multifold of revenue added on average every year from F10-F20, reflecting exponential growth for service providers globally.

Exhibit 67: Incremental revenue trend of India's top 4 IT services firms



Source: Company data, Morgan Stanley Research
Note: Top 4 Includes (TCS, Infosys, Wipro & HCLT)

Exhibit 68: Accenture's incremental revenue



Source: Company data, Morgan Stanley Research
Note: Accenture numbers are aligned to YE March in order to make it comparable to India IT Services. F23 represents actuals for May-22 and Aug-22, midpoint of Accenture's guidance for Nov-22 and midpoint of guidance ask rate for Feb-23.

Medium-term demand drivers still intact barring near-term macro volatility

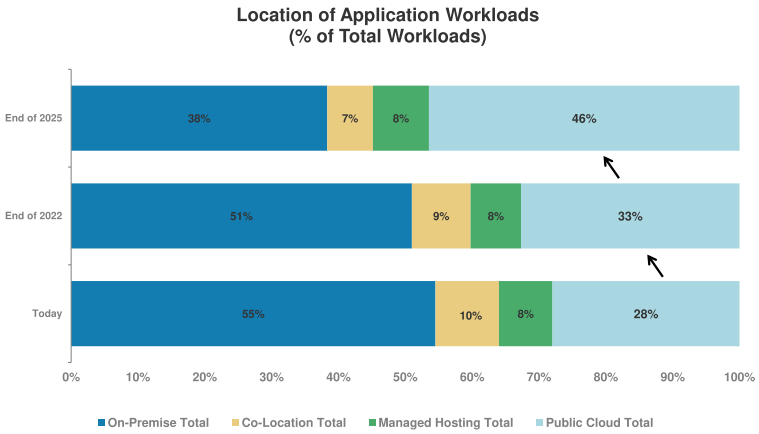
We believe public cloud adoption is going to be a secular trend as reflected in our AlphaWise CIO survey, which highlights the current 28% of workload adoption is likely to increase to 46% in the next 3 years. As per our global technology team, faster adoption of public cloud not only helps in providing greater flexibility/scalability but also increases the speed of innovation and the ability to implement new services like data analytics and machine learning.

This view is echoed by TCS' CEO, who believes that this is a multi-year technology cycle and the shift to the public cloud is just the beginning. As per TCS management, only when enterprises have moved to the cloud and built a digital technology stack will they be able to use technologies like AI/ML to build digital native applications and experiment with new business models. These data points indicate that the digital transformation of enterprises is here to stay and will take place over the next few years, providing a structural tailwind to revenue growth for IT services companies.

Tight supply led to greater use of outsourced services

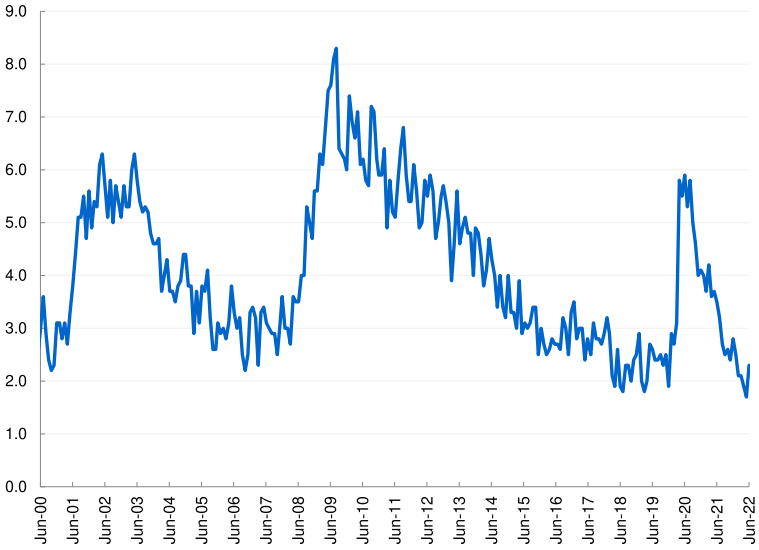
As in the post-GFC period, attrition trends have picked up in the past few quarters with the resurgence in demand. A consistent increase in demand posed supply-side challenges both for service providers as well at the clients' end. Unemployment levels in the professional and technical services industry in the US is at a multiyear low. From that perspective, clients became increasingly dependent on outsourced services to deliver on their business objectives. In our CIO survey, 48% of respondents noted increasing usage of IT services providers due to internal talent shortages.

Exhibit 69: CIOs estimate 28% of application workloads reside in the public cloud today...



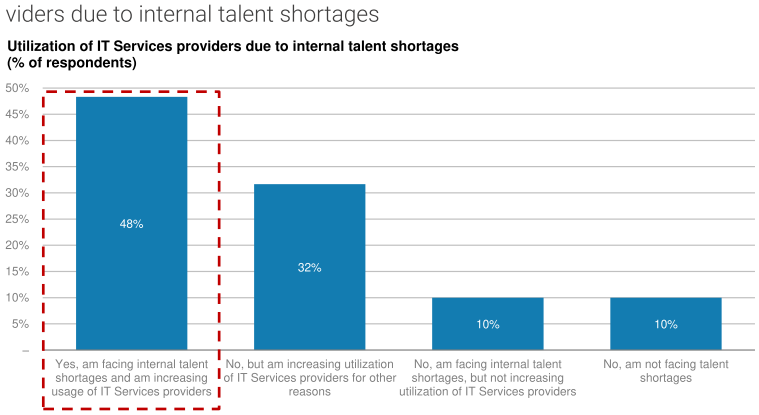
Source: AlphaWise, Morgan Stanley Research, n=100 (US and EU data)

Exhibit 70: The unemployment rate in the professional and technical services industry in the US has fallen since the Covid-led spike (%)



Source: Bureau of Labor Statistics, Morgan Stanley Research

Exhibit 71: 48% of respondents noted increasing usage of IT services providers due to internal talent shortages



Source: AlphaWise, Morgan Stanley Research; n=60 (US and EU data)

Emergence of distributed delivery models and availability of large talent pool in India at a reasonable cost makes case for gain for India's services exports as % of global IT services spend

Emergence of distributed delivery model

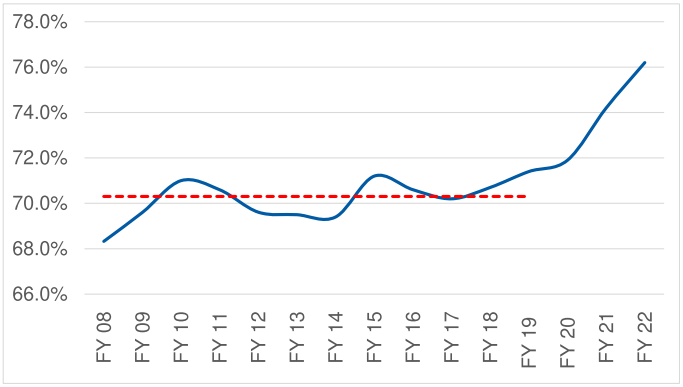
After Covid-19 hit, IT services companies shifted to a distributed delivery model working from remote locations. The adoption of a distributed delivery model by enterprises globally benefited India IT services as the propensity of global enterprises to offshore further increased, marking an inflection point for the industry. Tight labor markets globally led to increased use of outsourcing services, benefiting service providers in India.

We believe this is a structural change and is likely to stay as it allows companies to pool talent together faster across geographies and drive the quicker ramp-up of projects with better utilization rates.

The above places India very well globally given its large talent pool (India produces 1.5mn engineering graduates annually) at a reasonable cost (average salary in developed markets is 8-10 times higher than India) to gain share in worldwide IT services spend. The number of global inhouse captive centers that have opened in the last two years is almost double what opened in the prior four years. India's services exports will be supported by both third-party companies seeing improved growth rates and global enterprises setting up captive centers in India.

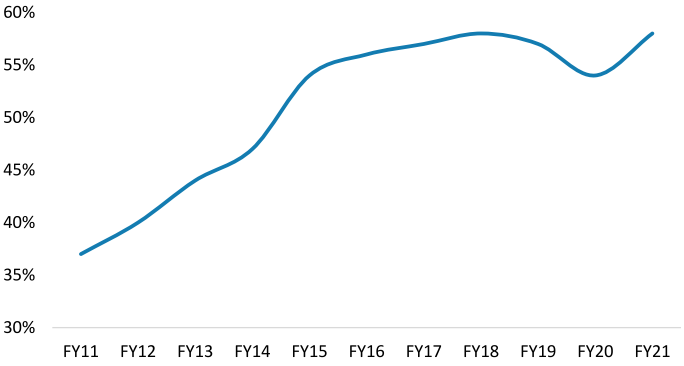
We believe India will remain a key geography for the delivery of IT services globally due to a) the availability of a large talent pool vs developed countries, where unemployment rates in the IT industry are very low, b) cost effectiveness in terms of cost per capita, and c) globally most of the larger vendors have offshore delivery capabilities in India and even if enterprises build a diversification strategy on location, it would be done by their existing larger go to vendors only. We also believe that a distributed delivery model mitigates some of the risks associated with the high concentration of a talent pool in few cities in India (such as Bangalore, Chennai, etc) given projects now can be staffed by people across locations virtually.

Exhibit 72: Infosys (proxy for India IT Services): The offshore effort mix (represented by employees working out of India) saw an inflection post Covid-19 – propensity to offshore has increased, opening up new avenues for service providers



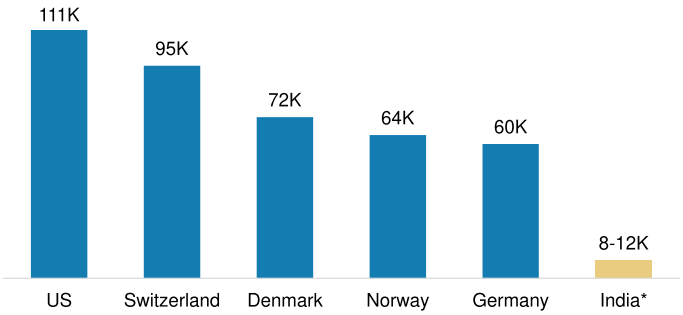
Source: Company data, Morgan Stanley Research; Above data is for Infosys' IT Services and consulting business

Exhibit 73: Capgemini (proxy for MNCs): Offshore headcount contribution to overall employee base saw an inflection in 2014-15 and since then has been increasing gradually



Source: Company data, Morgan Stanley Research
Note: Capgemini's Financial YE is December.

Exhibit 74: Average salary of global IT software professionals – India provides cost arbitrage compared to some global locations



Source: Daxx.com , *Morgan Stanley Research estimates for 2020

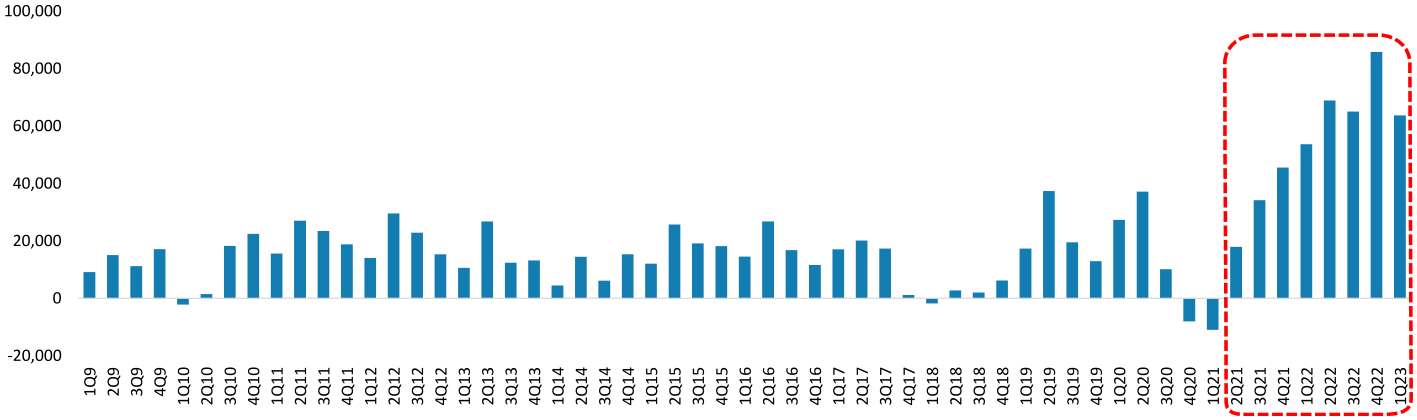
Emergence of hybrid working models – Third party and global enterprises both likely to ramp up headcount in India

The onset of Covid-19 led to the emergence of remote working models, and now companies globally are envisaging some form of hybrid working model for the future. TCS has laid out a vision for 2025 whereby it expects only 25% of its employees will need to be physically present in office locations at any time.

Global enterprises have been setting up Global Capability Centers (GCCs) in India to leverage the low-cost tech talent. As per Nasscom, approximately 140 MNCs set up GCC centers in India between F19 and F21. The number of GCCs added annually over F19-21 was almost double the rate in F15-19. With the onset of Covid the trend further picked up. Based on announced plans, India would see 500 new MNCs set up captive centers in the country by 2025 (as per a Nasscom Zinnov Study).

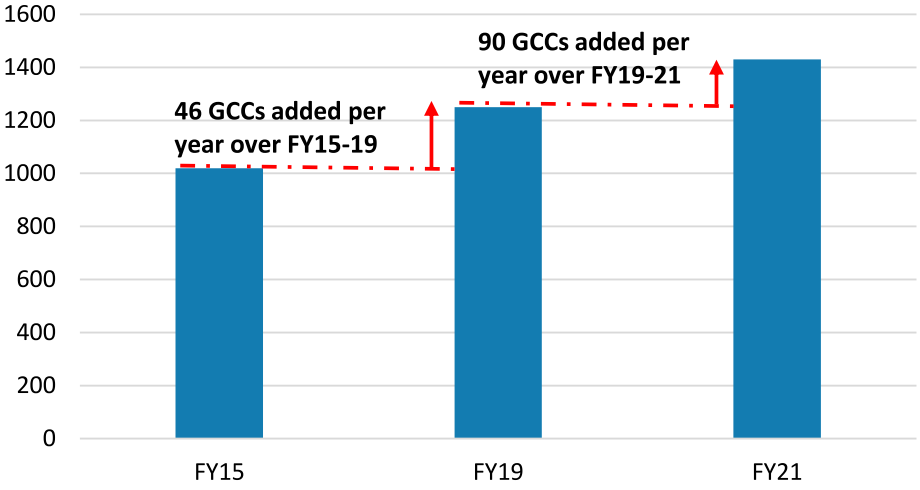
As one example, Fujitsu has announced plans to double its headcount in India from 7,000 to 14,000 and set up an R&D center in collaboration with the Indian Institute of Science, Bengaluru and the Indian Institute of Technology, Hyderabad to work in the areas of artificial intelligence and machine learning.

Exhibit 75: Net headcount addition for coverage universe has picked up massively in recent quarters compared to the past 10+ years



Source: Company data, Morgan Stanley Research

Exhibit 76: Accelerated pace of GCC additions in India in recent years



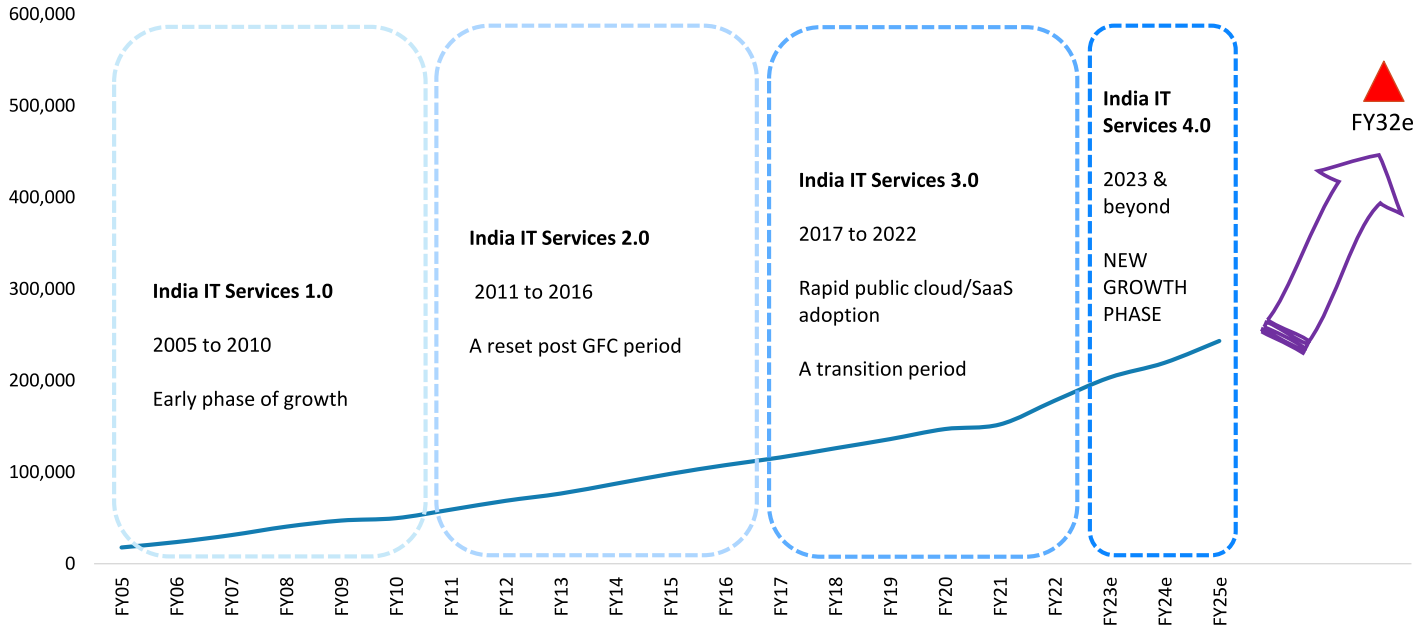
Source: Nasscom, Morgan Stanley Research

Exhibit 77: Plans announced by global companies

Key Message	Date of Newsflow	Media Source
Teleperformance to hire 20000 people in India in 18 months	17/8/2022	The Hindu
Rakuten India opens new office in Bengaluru, to hire 1000 more	25/8/20212	The Hindu
MassMutual to set up GCC in Hyderabad, invests Rs 1,000 crore.	11/1/2021	New India Express
TransUnion Expands its Global Capability Center in Chennai to Pune.	25/2/2021	Punekar News
MNCs to expand ops at global in-house centres, hire more in India.	17/8/2021	Livemint
Over 100 new global captive units expected in India in 2021 as of June 2021.	44292	Economic Times
Expect at least 150-200 new companies to set up GCCs in India in the next 3 years.	4/6/2021	Moneycontrol
Around 500 new MNCs are likely to set up captive centres in India by FY25 as of September 2021.	14/9/2021	Economic Times
80% of top 100 global Retail/CPG companies will set up GCCs in India by 2022.	23/12/2020	PR Newswire

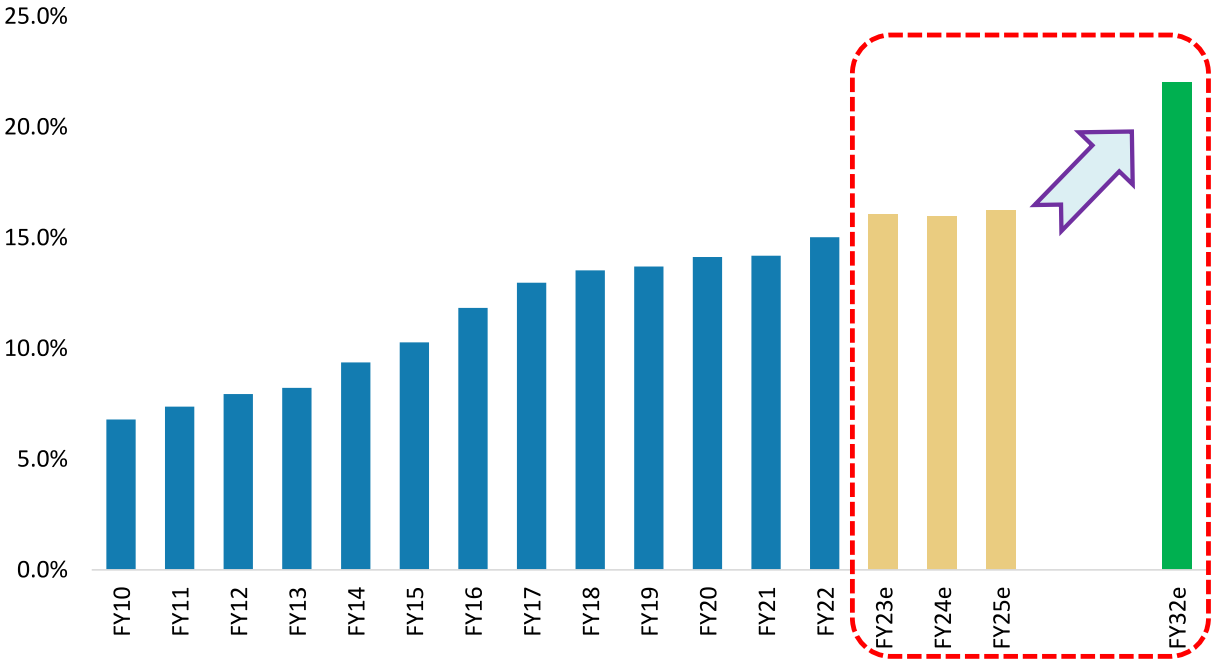
Source: Media articles, Morgan Stanley Research

Exhibit 78: Evolution of Indian IT services exports (US$mn)



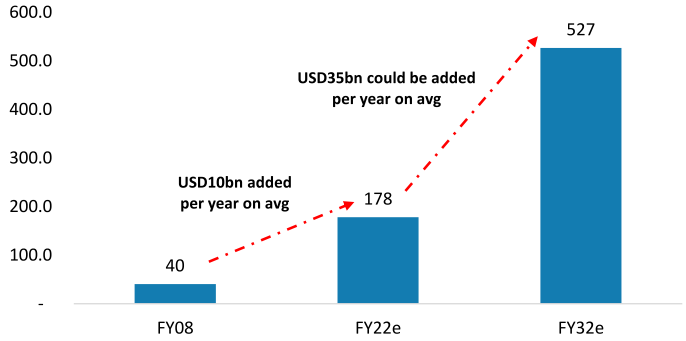
Source: Nasscom, Morgan Stanley Research

Exhibit 79: IT exports as % of worldwide IT services spend – Increasing relevance in the global IT spend market



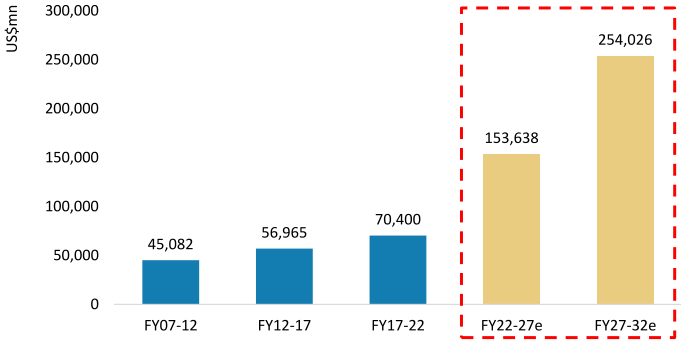
Source: Gartner, Nasscom, Morgan Stanley Research

Exhibit 80: Indian IT exports to increase sharply over the next decade, assuming sustained market share gains for Indian IT players and global demand trends sustaining (US$bn)



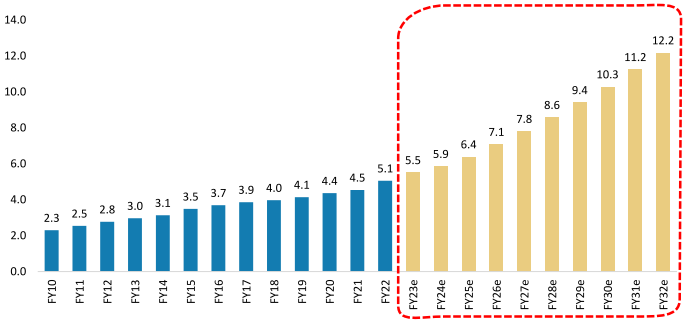
Source: Gartner, Nasscom, Morgan Stanley Research estimates

Exhibit 81: India's incremental exports (US$mn)



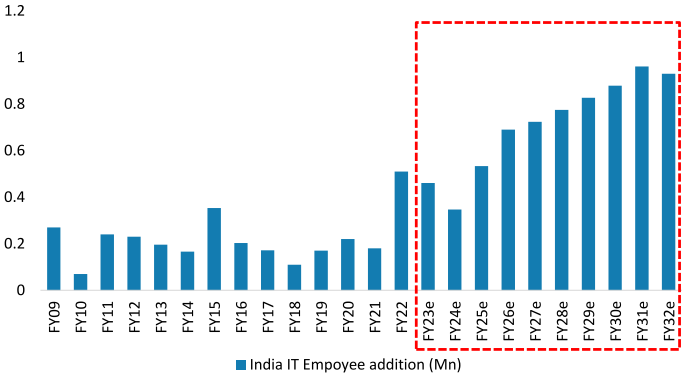
Source: Nasscom, Morgan Stanley Research

Exhibit 82: India's IT workforce to more than double by F32...



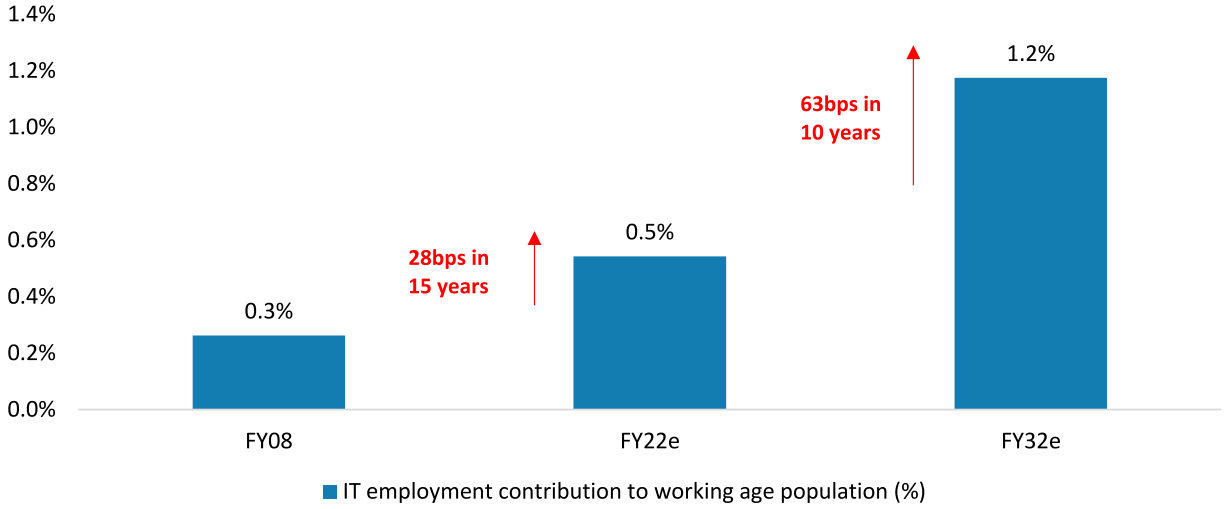
Source: Nasscom, Morgan Stanley Research

Exhibit 83: ...leading to significant employment generation in India, even after taking into account an uptick in revenue productivity



Source: Nasscom, Morgan Stanley Research estimates

Exhibit 84: IT employment continues to gain as a percentage of the working-age population (15-64 years)



Source: UN Population Database, Nasscom, Morgan Stanley Research estimates

Implications of services boom for the real estate sector

Multi-year IT services outsourcing trend – India's competitive advantages in terms of its engineering talent pool, low-cost labor and infrastructure, and good IT connectivity are the enablers of this trend.

Fueling demand for Grade A office space – IT services and global captive businesses are people-intensive. This has led to a steady build-out of office stock of 35-40msf annually in the top 7 metros.

Profiling office sector trends – Roughly 80% of the tenants of large office campuses are multinational companies operating in IT services, GCCs and tech products, and catering to demand in the US and Europe. The up-front capex for fitting out facilities ensures the stickiness of these tenants over a long period.

Capital-intensive, yield returns – For developers, this is a capital-intensive business due to the up-front land and construction costs. The returns are rental yields. Together, these lead to entry barriers to the business for players with weak balance sheets.

IT centers have given rise to large residential developments – IT services and GCC companies in these office campuses have led to high employment generation of white-collar workers with good income levels. They have, in turn, given rise to urban clusters with high demand for residential space. Examples include Manyata Park in Bangalore, DLF Cybercity in Gurgaon, etc.

Outlook – Given India's competitiveness in IT outsourcing, we expect demand for office and residential space in the top 7 metros will continue to grow through the current decade.

Multi-year IT services outsourcing trend – India is one of the fastest-growing markets for office space, with annual commercial absorption of 35-40msf. This is essentially driven by demand from multinational companies, especially IT firms, followed by non-IT segments such as financial services, healthcare, consumer discretionary, startups, and emerging flexible office spaces. Commercial demand from IT services commenced in the early 1990s following rapid declines in IT hardware prices and import tariffs, which lowered capital barriers to entry. As of 2021, the technology sector contributed about 40% to overall office absorption.

Competitive cost advantage – Over the years, IT companies have been attracted to India because of the low-cost intellectual capital and physical infrastructure. India offers a large pool of skilled, affordable and English-speaking engineering talent, which is imperative in IT services as it is a people-intensive business. In addition, the low cost of physical infrastructure and operations makes it an attractive destination for investment.

Fueling demand for Grade-A office space – IT firms are continuing to expand and consolidate their presence in India. These companies are increasingly doing high-end work including cloud migration, fintech, artificial intelligence, big data, and cybersecurity. Companies are emphasizing quality infrastructure and wellness in offices, which is resulting in a shift in preference to integrated Grade A office parks (campus-style offices with multiple buildings spread over a large land parcel with recreational activities, connectivity, amenities, ESG compliance, etc) in metros.

Pan-India Grade A commercial completed stock has grown from 275msf in 2010 to 670msf in 2021 across the top 7 metros, according to JLL. Of these, the top 3 – Bangalore, Mumbai and NCR Delhi – contribute 63% of total stock. The completed stock for each of these cities has increased from 20msf in 2003 to 140msf+ in 2021, driven by an expansion of central business districts (CBDs) and the emergence of secondary business districts (SBDs).

Profiling office sector trends – The government facilitated the IT services industry and MNC expansion to India through initiatives like the creation of special economic zones. Geographically, 60-70% of MNCs in India are either from, or have exposure to, the US and EU. The global integration of software and technology provides an advantage to Indian firms operating in IST time zones, as they allow for around-the-clock development work.

Commercial tenants tend to be sticky given their preference for low-cost office rentals in India (roughly US$1 psf pm), significant investments incurred on fit-out costs, and talent availability. A typical rental contract is for 15 years, within which there is a renewal clause of every five years. The underlying work conducted by these companies includes strategic, product development, analytical, etc. Below are some examples:

- American companies opened software centers in India to strengthen their interaction with Indian suppliers and development under R&D activities. These have include Cisco, HP, IBM, Microsoft, Motorola, and Oracle.
- India has emerged as the back office of global corporations and a leading provider of tradable services.
- Pharmaceutical companies setting up bases/partnerships for conducting clinical trials of new drugs.

High entry barriers – Commercial development requires up-front investments (Rs5-10kpsf) which do not yield returns until the projects are completed. This capital-intensive business model causes inherent barriers to entry in this asset class, as most Indian developers have capital constraints due to high leverage built over the years. As a result, there are limited large pan-India commercial conglomerates. They operate their businesses on a hybrid model, having exposure to both commercial and residential development, so as to balance cash flows.

Commercial outlook – We believe office demand will continue to be driven by strong market fundamentals, sustained IT sector growth, increasing demand from GCC players such as BFSI, retail, manufacturing, ecommerce, healthcare, co-working space providers, and tech product companies.

We estimate that the number of tech employees will rise from 5mn in 2021 to 11.3mn by 2030, implying a 9.5% CAGR. We estimate office space requirements will grow at an 8.3% CAGR over this period, adding a total of roughly 650msf. Of this, we estimate a third will be campuses owned by domestic IT companies. The balance, plus some domestic rental demand, should result in a 450-500msf incremental space requirement from developers. We expect office absorption to increase from 32-35msf annually to a run-rate of 45-50msf annually over the next 5-10 years. This will be driven by both metros and tier 1 cities, as occupiers look to diversify their geographic risks and talent pools.

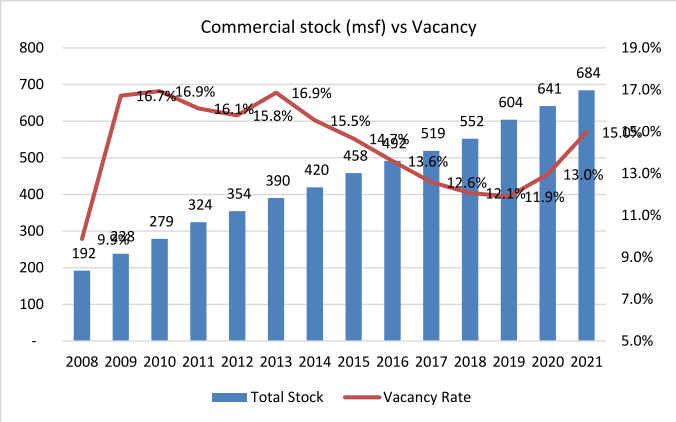
Rising demand for residential properties – Housing demand is driven by factors such as urbanization, affordability, accessibility, rising nuclear families, connectivity, etc. One such primary driver includes employment creation, or proximity to new corporate hubs. Over the past two decades, new residential clusters across Tier 1 metros have been created in the neighborhoods of new commercial

developments. This includes DLF Cybercity (Gurgaon), Whitefield (Bangalore), HiTech City Madhapur (Hyderabad), etc. Job creation results in income growth and higher savings, improving affordability. Plus, shorter travel times attract developers to create housing units.

Stock of inhabited residential spaces has (cumulatively) been building up over last several years of IT sector growth – New townships in Bangalore, Gurgaon and Mumbai have been built as a consequence of mixed-use urban planning. This includes large plots of land having offices, retail outlets, food corners, and residential apartments. Examples include DLF Phase V (Gurgaon), Shantiniketan (Bangalore), and Garden City Mumbai. More such townships will be created going forward, we believe.

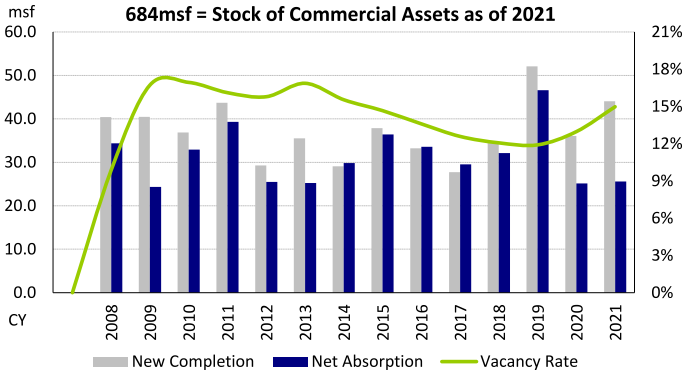
Residential outlook – We expect volume growth to be 200-400bps ahead of real GDP growth, with 5-7% annual increases in pricing. This would translate into a 13-17% CAGR for value over the next 10 years, starting from 2021.

Exhibit 85: India: Commercial stock



Source: JLL REIS, Morgan Stanley Research

Exhibit 86: India: Absorption and completion of commercial stock



Source: JLL REIS, Morgan Stanley Research

Exhibit 87: India: Office snapshot

	msf	Vacancy	Rent (Rspsfpm)
CBD	37	8%	123
SBD	298	12%	104
Suburbs	328	21%	61
Pan-India	662	16%	84

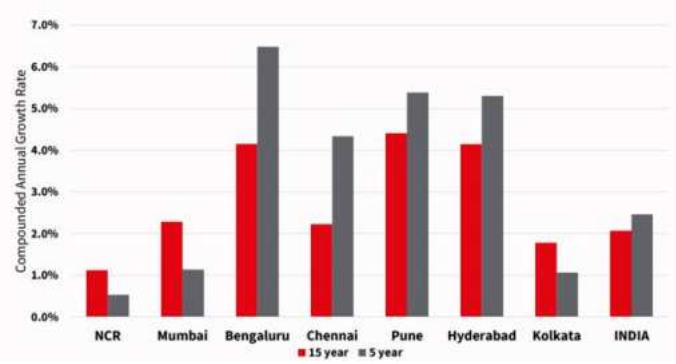
Source: JLL REIS, Morgan Stanley Research

Exhibit 88: India: Office snapshot by city

City	msf	Vacancy	Rent (Rspsfpm)
NCR Delhi	133	30%	78
Kolkata	26	26%	51
Hyderabad	80	17%	62
Chennai	68	10%	64
Mumbai	135	16%	127
Pune	65	5%	75
Bangalore	156	11%	81

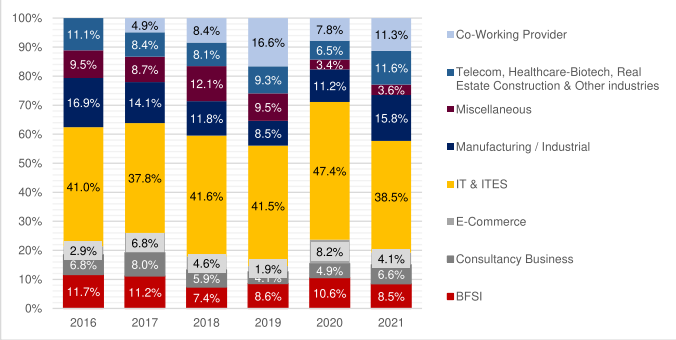
Source: JLL REIS, Morgan Stanley Research

Exhibit 89: India: Rental rate growth through 2020



Source: JLL REIS, Morgan Stanley Research

Exhibit 90: India: IT is the dominant segment in commercial real estate by area



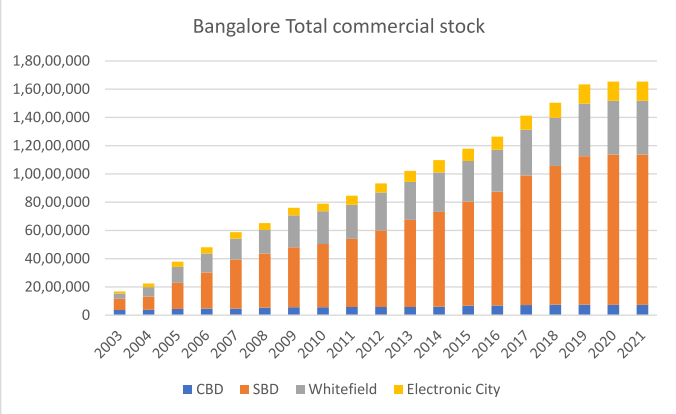
Source: JLL REIS, Morgan Stanley Research

Exhibit 91: India: 2021-23 supply of IT, IT SEZ and non-IT projects (in msf)

City	IT Park	IT SEZ	Non IT	TOTAL
Bengaluru	15.3	14.4	8.1	37.9
Chennai	5.0	5.0	0.1	10.1
Hyderabad	10.5	11.8	11.6	33.9
Kolkata	1.5	0.0	1.4	2.9
Mumbai	11.2	1.0	10.9	23.1
NCR Delhi	11.9	6.1	9.3	27.3
Pune	4.7	5.1	6.5	16.3
TOTAL	60.1	43.6	48.0	151.6

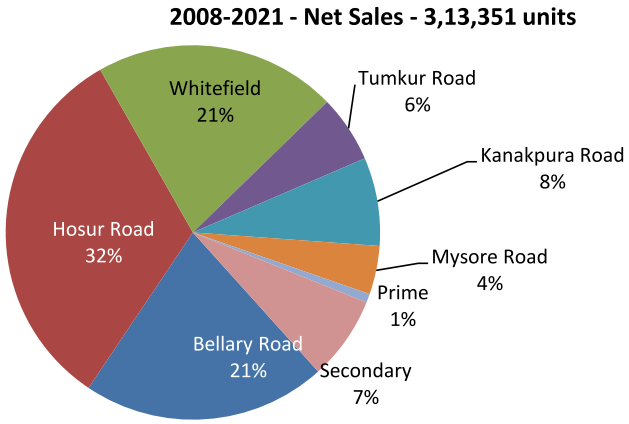
Source: JLL REIS, Morgan Stanley Research

Exhibit 92: Bangalore office stock



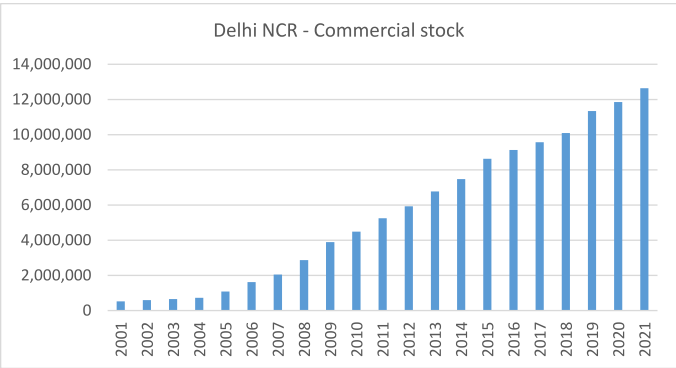
Source: JLL REIS, Morgan Stanley Research

Exhibit 93: Cumulative Bangalore residential sales



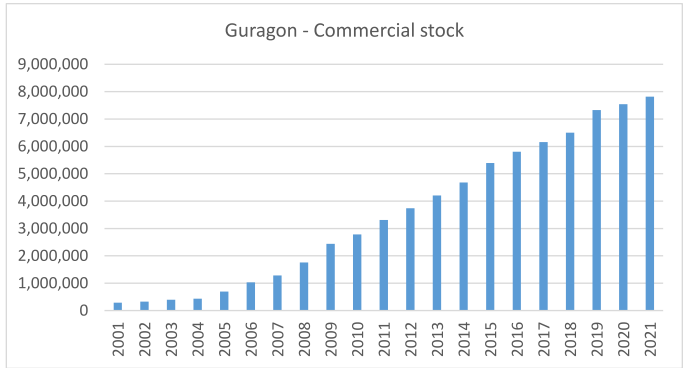
Source: JLL REIS, Morgan Stanley Research

Exhibit 94: Delhi NCR commercial stock



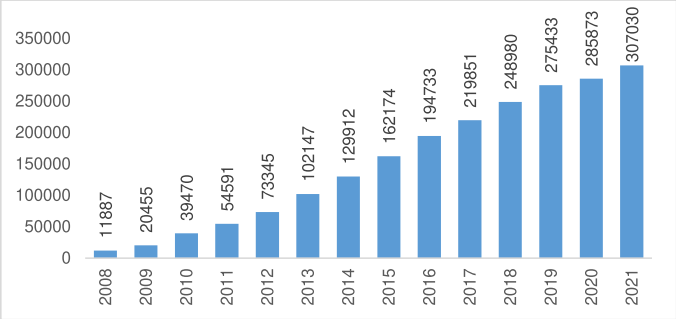
Source: JLL REIS, Morgan Stanley Research

Exhibit 95: Gurgaon commercial stock



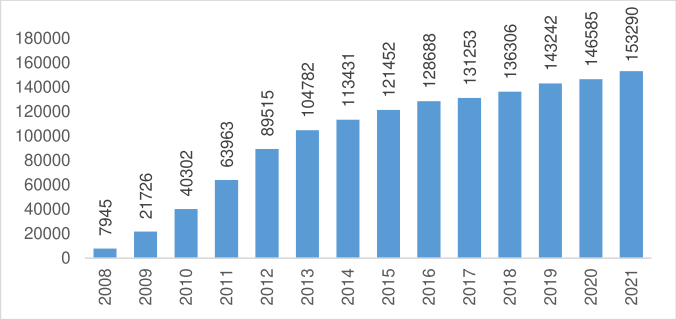
Source: JLL REIS, Morgan Stanley Research

Exhibit 96: Bangalore cumulative new sales (units)



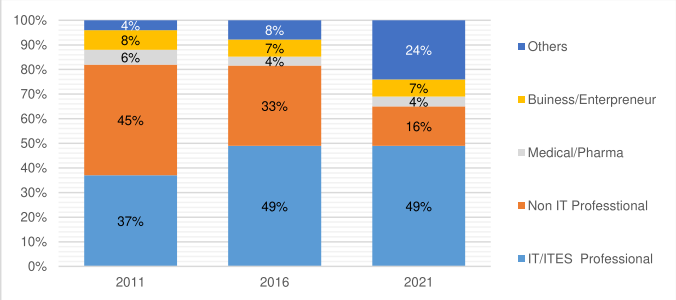
Source: JLL REIS, Morgan Stanley Research

Exhibit 97: Gurgaon cumulative new sales (units)



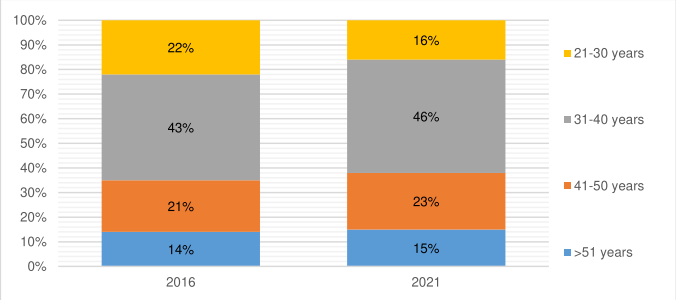
Source: JLL REIS, Morgan Stanley Research

Exhibit 98: Sobha – Residential buyer profile by occupation



Source: Company data, Morgan Stanley Research; Rolling 12 months ending December 2021

Exhibit 99: Sobha – Residential buyer profile by demographic



Source: Company data, Morgan Stanley Research; Rolling 12 months ending December 2021

The Consumer to the World

A US$1.8trn retail market by 2031: We expect consumption to maintain its share in GDP at around 58%, growing at a 9% CAGR through 2031. We expect consumption to further shift from staples to discretionary as India's per-capita income rises from US$2,278 now to US$5,242 by 2031. At this point a higher allocation of incremental earnings will be directed toward discretionary spending, setting the stage for a consumption boom. Moreover, we expect 87% of households to have per-capita income in excess of US$5,000, as compared with 62% currently. As a result, non-grocery consumption will rise to US$3.6trn from US$1.4trn for a share of overall consumption of 79.3%, up from 73.5% now. This implies growth at a 10% CAGR over 2022-2031, as compared to 6.8% in 2012-2021. Within this, we expect retail non-grocery segments (including apparel, electronics, etc) to deliver a 12.2% CAGR over 2022-2031 compared with 6.2% in the preceding 10 years, with its share of consumption reaching 20% by 2031 from 15% currently. The retail non-grocery segment will reach US$895 bn vs. US$155 bn, currently.

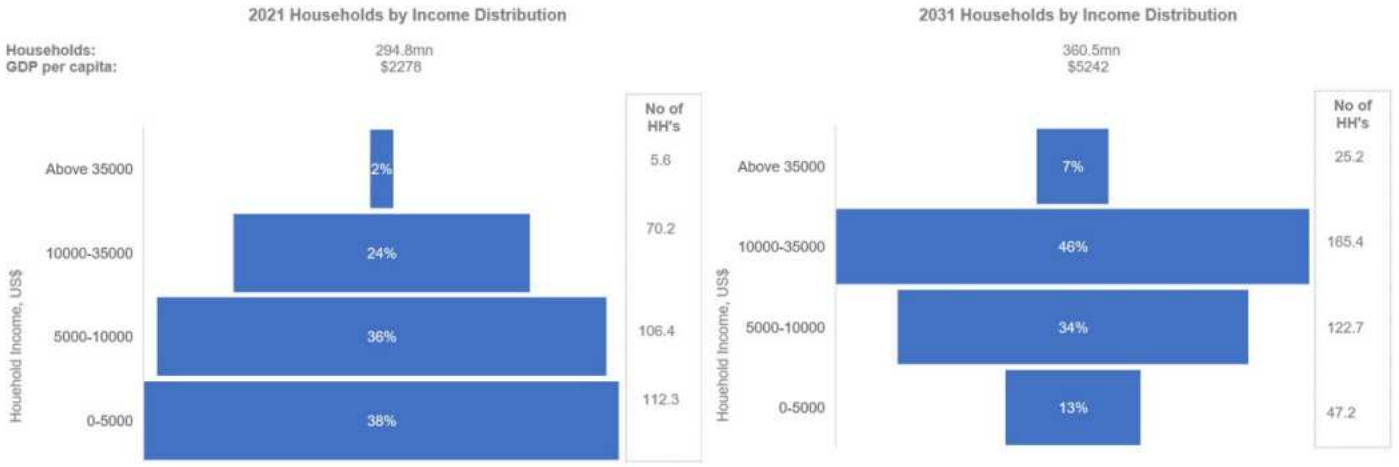
To put this in context, it took just five years for China's per-capita GDP to rise from US$2,000 to above US$5,000 (2006-2011), during which time the retail market more than doubled from US$713bn to US$1.6trn (17% CAGR) while the grocery market recorded a lower 15% CAGR, reducing its share in retail by 500bps to 45%. In India, we expect the transition from US$2,000 to US$5,000 to take 10 years (by 2031). Consumer spending is already on the rise, as per-capita GDP has crossed the US$2,000 mark. We expect number of households earning in excess of US$35,000/year is likely to rise fivefold in the coming decade to over 25mn. During this time, we estimate the total retail market will grow at a 9% CAGR and rise to US$1.8 trillion from US$461bn. and the grocery market at a lower 6.5% CAGR and rise to US$939bn from US$499bn, currently.

India's 'AAA' opportunity: The optimism on India's consumption story comes from the 'AAA' opportunity of Age (Gen-Z and Millennial populations), Aspiration (social media has narrowed the information gap) and Access (e-commerce has deepened the reach of brands, thus closing the aspirational divide between urban and rural). These three, together with rising per-capita incomes, will drive significant changes in India's consumption patterns. We forecast India's e-commerce GMV to increase at a 16% CAGR through 2031, taking e-commerce's share of retail sales to 12.3% from 6.5% in 2021. India's e-commerce GMV will exceed US$220bn by 2031, we estimate, up from US$51bn currently.

Role of e-commerce for discretionary and staple businesses: India's young, aspirational, and internet-connected consumer cohort is driving e-commerce adoption, and companies are investing in omni-channel solutions. However, a large unorganized retail segment could keep e-commerce penetration lower than in developed countries.

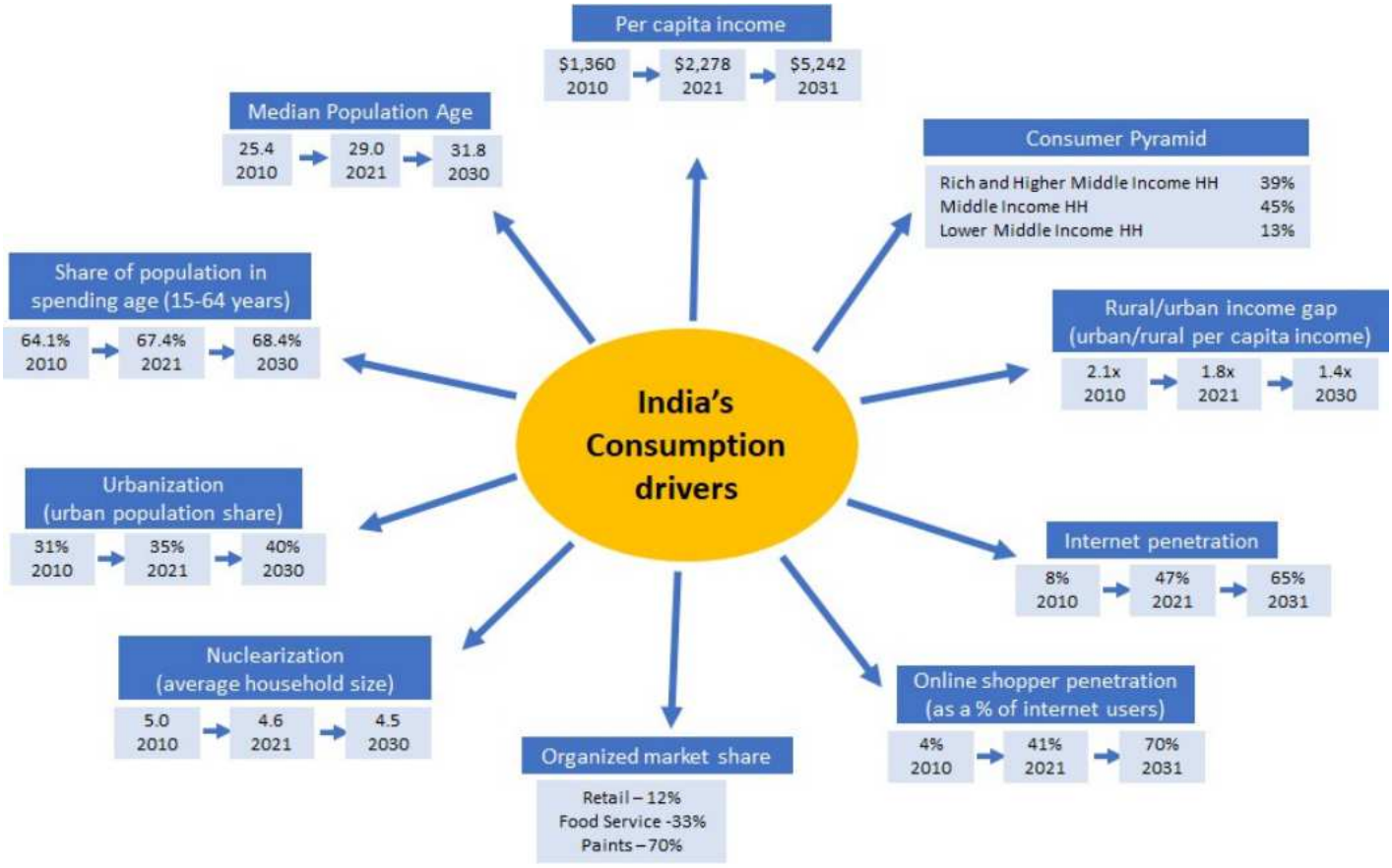
We expect e-commerce to be part of the overall strategy of traditional discretionary and staple companies, and we also see e-commerce players focusing on offline strategies. The way forward for discretionary businesses is being omni-channel with online providing scale to businesses and offline supporting brand-building and driving profitability. For staple businesses, we expect e-commerce share to rise to levels seen for modern trade over the medium term.

Exhibit 100: Major shift coming in India's income pyramid



Source: Morgan Stanley Research (including estimates)

Exhibit 101: India's consumption drivers



Source: Euromonitor, RedSeer, World Bank, Morgan Stanley Research estimates

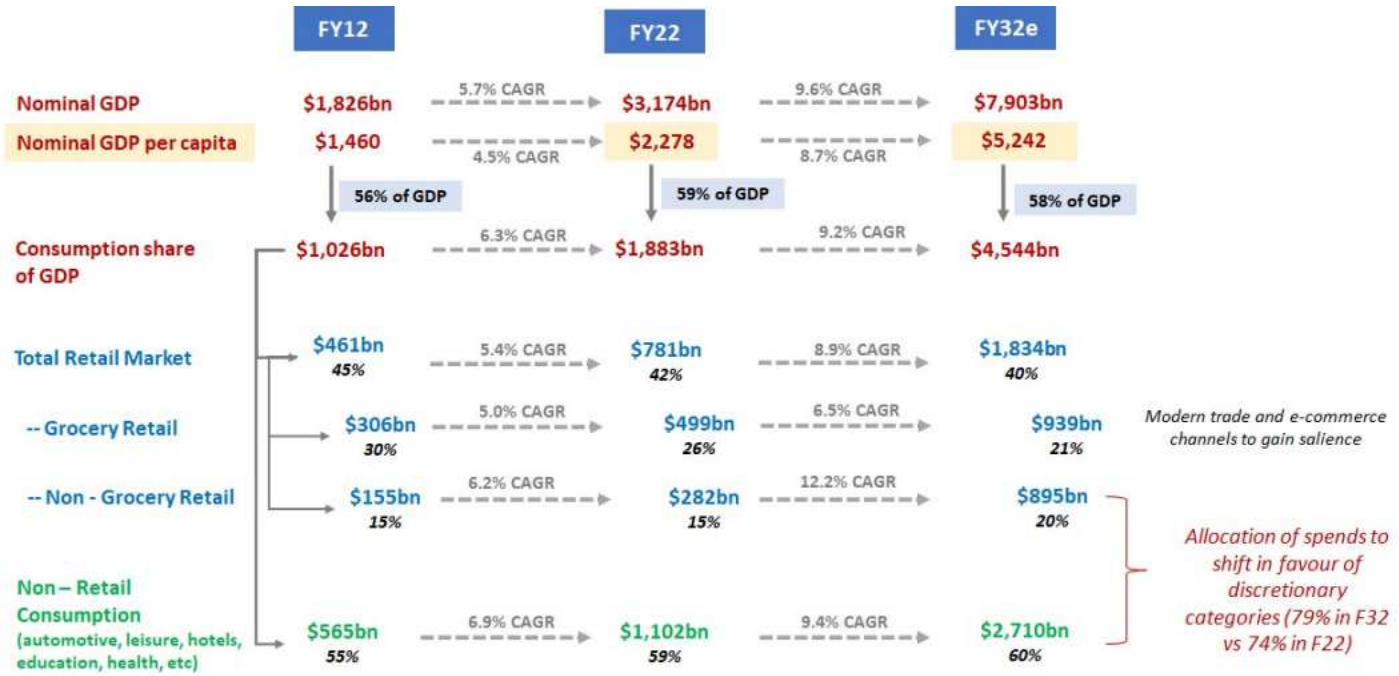
India's consumption opportunity is unchanged but the mix is shifting: US$1.1trn incremental retail opportunity by 2031

India has been a consumption-led economy for multiple decades (currently running at around 59% of GDP) and this is unlikely to change over the next few decades given the drivers in place. We estimate that consumption will retain a dominant share in GDP at 58% in 2031, registering 9.2% annual growth. The continuing strength in consumption can be attributed to a mix of socioeconomic factors including the demographic dividend, with declining age dependency, and a steady rise in per-capita income. In addition, rapidly emerging organized retail formats, digital and technology adoption including the ONDC, rising urbanization (35% in 2020 likely going to 40% by 2030) and increased access to financing are reorienting the consumption basket.

The major boost to consumer activity will likely occur in the discretionary consumption space. Consumer spending is already on the rise, as per-capita GDP has crossed the US$2,000 mark. Discretionary consumption will see a big shift when per-capita income rises above US$2,000, as observed globally. As that level is passed and moves toward US$5,000 by 2031, incremental income will be spent on discretionary goods and services and household expenditure will look very different from the past.

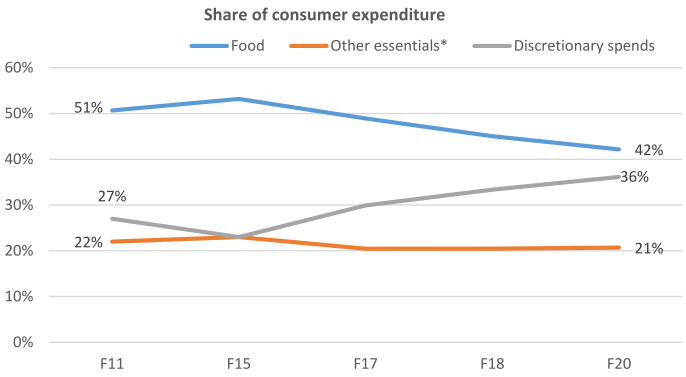
Based on the current consumption patterns, food accounts for over 40% of annual household expenditure, among the highest such levels globally. While this is likely a reflection of India's current level of economic development, as per-capita incomes rise the share of expenditure will shift towards non-food consumption. A further deep dive into the income cohorts suggests that the food share for the low middle-income group gradually moves to around 20%, implying 80% of income will become available for discretionary spending.

Exhibit 102: India's consumption opportunity is unchanged but the mix is shifting



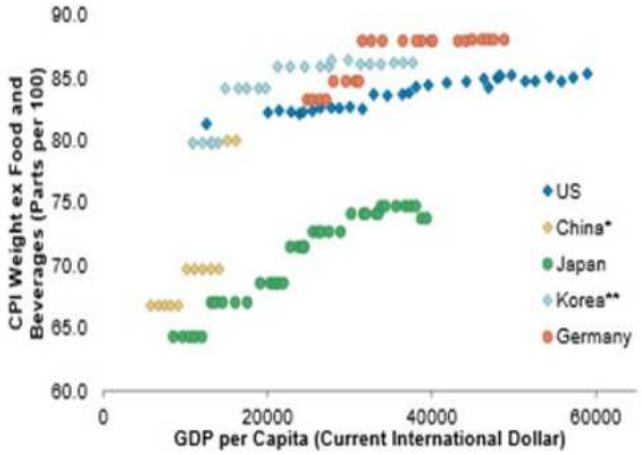
Source: Morgan Stanley Research estimates

Exhibit 103: Shift in consumption behavior: Trend already visible in India



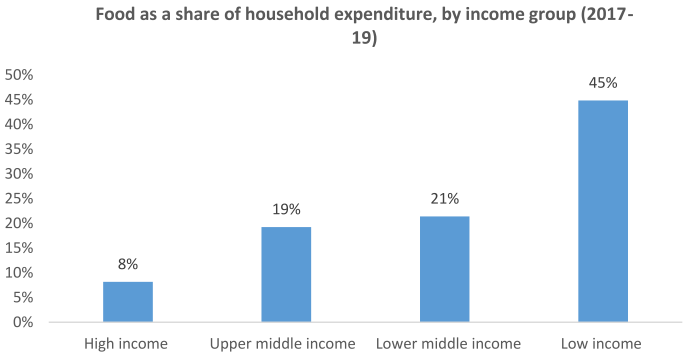
Source: CMIE, Morgan Stanley Research. Note: *other essentials includes cosmetics & toiletries, bills & rent, and power & fuel

Exhibit 104: Rising per-capita incomes indicate shift in consumption patterns away from food



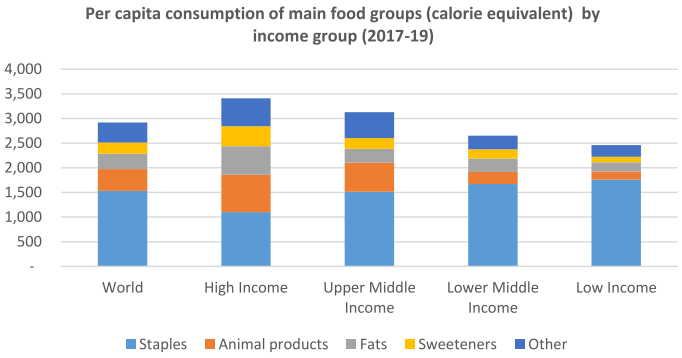
Source: CEIC, Haver, IMF, Morgan Stanley Research. Data for the following time frames for various countries – US: 1980, 1987-2017, China: 2006-2017Japan: 1970-2017, Korea: 1994-2016, Germany: 1995-2017

Exhibit 105: Food as a share of household expenditure, by income group



Source: OECD, Morgan Stanley Research. Note: Calculated on per-capita GDP and excludes food consumed away from home. The 38 individual countries and 11 regional aggregates in the baseline are classified into the four income groups according to their respective per-capita income in 2018. The applied thresholds are: low: < USD1,550, lower-middle: < USD3,895, upper-middle: < USD13,000, high: > USD13,000

Exhibit 106: Per-capita consumption of food varies significantly by income group



Source: OECD, Morgan Stanley Research. Note: The 38 individual countries and 11 regional aggregates in the baseline are classified into the four income groups according to their respective per-capita income in 2018. The applied thresholds are: low: < USD1,550, lower-middle: < USD3,895, upper-middle: < USD13,000, high: > USD13,000. Staples includes cereals roots and pulses. Animal products include meat, dairy products (excluding butter), eggs and fish. Fats include butter and vegetable oil. The category others includes fruits, vegetables, etc.

As overall consumption more than doubles during the next decade to US$4.5trn, we expect non-grocery retail spend to go up over 3.5x by 2031 to US$895bn. This will result in non-grocery retail share in consumption rising to about 20% as compared to 15% currently. More than growth, even the shift towards organized from unorganized will also be an important lever to growth. Apparel and accessories, which is the largest retail category, will see the fastest growth in the non-grocery retail segment at a 14.1% CAGR during 2022-2031 vs. 9.4% in 2012-2021.

Other discretionary categories that will benefit from the income acceleration include leisure & recreation, hotels & catering, household goods & services, education, health goods, and medical services.

Grocery, which currently accounts for 26% of consumption, will see some loss of share, to 21%, led by category shifts. Nevertheless, within grocery we expect the modern trade and e-commerce channels to continue to gain salience and rise to 7.7% and 3.3% by 2031, respectively, from 3.4% and 1.1% currently. This shift in channel mix will be driven in our view by accelerated investments in these organized channels (given the low starting point), improved convenience and higher digital adoption, among other reasons.

India's AAA cohort is enabling change

India's AAA cohort is changing the way they shop.

1) Age: At 708mn, India has the largest Gen Z and Millennial population base globally. This community not only has higher literacy levels than previous generations, but also smartphones that allow them to

stay connected. The adoption of new technologies and global trends will be faster among this group, in our view.

2) Aspiration: Social media is playing an important role in creating awareness and aspirations among the younger generation.

3) Access no longer denied: Social media creates aspirations and e-commerce fulfills them. Earlier, having a large retail presence was restricted to major cities. Today, large e-commerce companies cover more than 80% of pincodes, making access to products easier for smaller towns. The gap between urban and rural consumers is narrowing due to rising incomes (partly from direct benefit transfers) and financial penetration, as well as access to information given rising digital adoption. This, in our view, is reducing the aspirational disconnect of the past. Moreover, even as only 50-60mn of total households shop online, we believe this number will experience a strong acceleration as we see this as a step change in consumer behavior.

We believe the face of distribution and marketing is changing very quickly and brands are getting created much faster than in the past. The rising share of internet reach and shopping is driving existing companies to scale digitally. As e-commerce gains dominance, we believe erstwhile moats around brands and physical distribution are likely to come under threat for staple companies, while discretionary companies can scale up faster through e-commerce.

Regulatory changes to drive a faster shift

In the discretionary landscape, the growth opportunity remains large. However, given the massive unorganized landscape in India across categories, the willingness to spend on brands has been restricted to the top percentile of households even as affordability has improved. The presence of a large unorganized market has provided cheaper alternatives to brands for the value-conscious Indian consumer. The case in point being the retail sector, the success of which – in spite of income growth, urbanization and favorable demographics – has been mixed as scale and opportunity were restricted to certain pockets of urban India. The combination of the GST Law and pandemic-led digital adoption has made the adoption of organized channels faster.

- The Goods and Service Tax regime implementation in 2017 marked a big boost to the shift from unorganized to organized for the consumer sector (including brands, consumer packaged goods, as well as consumer durables, etc).
- The rising adoption of digital commerce over the years has provided a fillip to this shift. In the past only digitally-native companies participated in this story. Post the pandemic, traditional retail companies are also focusing on building comprehensive omni-channel ecosystems.

India's e-commerce story still has a long growth runaway

We believe e-commerce growth was accelerated by almost 3-5 years due to the pandemic, taking penetration up by over 200bps in two years vs. annual increases of 50-60bps in the past. Given the income backdrop, we forecast India's e-commerce GMV to increase at a 16% CAGR through 2031, taking e-commerce's share of retail sales to 12.3% from 6.5% in 2021. India's e-commerce GMV will exceed US$220bn by 2031, we estimate, up from US$51bn currently.

The overall e-commerce share for the apparel & accessories category will see a rise to 22% by 2031 from 7% currently (again among the fastest-growing segments of e-commerce). This is still much lower than the average of 29% across global markets in 2021. The key reasons for the lower penetration are India's large unorganized market (over 50%) and its high share of fine jewellery given the cultural significance of gold. Due to the ticket size, lower e-commerce penetration is seen for fine jewellery, and that weighs down overall apparel & accessories penetration. Ex-fine jewellery, the e-commerce share is currently at 9%, and we expect this to double by 2026 and reach 28% by 2031.

In the past, the electronics category has seen the largest increase in e-commerce penetration. In fact, this is one category where India's e-commerce penetration has already reached levels comparable to markets such as the US, UK and China. In contrast, the penetration of the food & beverages category has been very low. The key reason is a result of low share of organized grocery retail, at less than 5%, and an e-commerce share of just 1%. Over the next five years, beauty & healthcare and apparel & accessories will see the largest delta in e-commerce penetration, we believe.

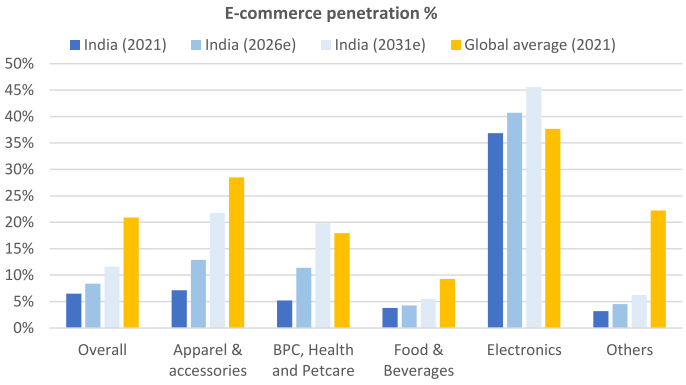
Large companies are pushed to choose digital commerce – While the large brands continue to focus on physical distribution, they cannot ignore the digital opportunity. Like the modern trade, digital commerce is taking share from physical markets (including general trade and unorganized), and at a faster pace. Thus companies are creating products and brands for digital-native consumers. Even traditional retailers are adopting digital roadmaps to drive their future growth. There is indeed a renewed focus on the creation of a comprehensive ecosystem that integrates digital into the traditional retail experience that accompanies the consumer throughout their shopping journey, from researching a product to purchasing and reviewing it.

From a FMCG share perspective, the share of e-commerce sales to total sales has risen to 9% vs. 5% pre-pandemic. We expect e-commerce's share in FMCG sales to rise to 15% over the medium term. This share increase will be in line with the trend seen for modern trade (from 5% to 14% share as of 2019) in 2008-2019. This share gain will largely come at the expense of mom & pop stores. In recent years, the modern trade shift has driven a larger focus on a wider assortment; we expect the e-commerce shift to drive faster premiumization across categories, a deeper reach in smaller markets, and a speedier innovation cycle for most companies.

Companies best positioned to benefit, and those potentially challenged

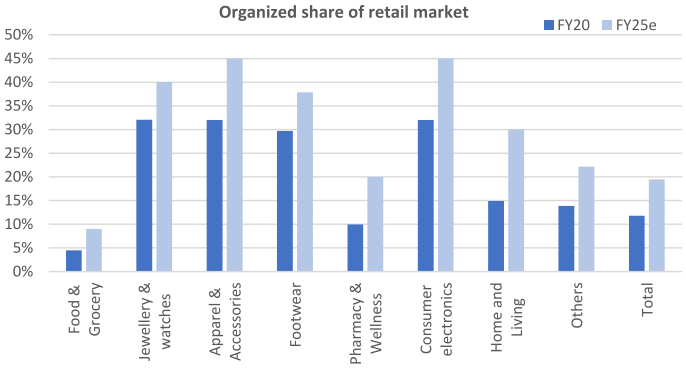
- We believe the biggest potential beneficiaries from this income and consumption transition will be profitable grocery retailers and multi-brand retailers. As a preference we think omni strategy plays will be best positioned from this consumption boom.
- In the past, the key ingredients to brand creation were physical distribution and marketing. We believe consumer brands will face much stronger competition from D2C brands than in the past, given the faster reach of information (social media), changing face of distribution (e-commerce), scaling opportunities and greater access to capital. Thus, entrenched players could find themselves challenged in a relative sense (large mass consumer brands). We believe HPC brands will face higher competitive intensity from D2C brands. The rate of success is also much higher than in the past.

Exhibit 107: India's e-commerce penetration trends vs. global averages



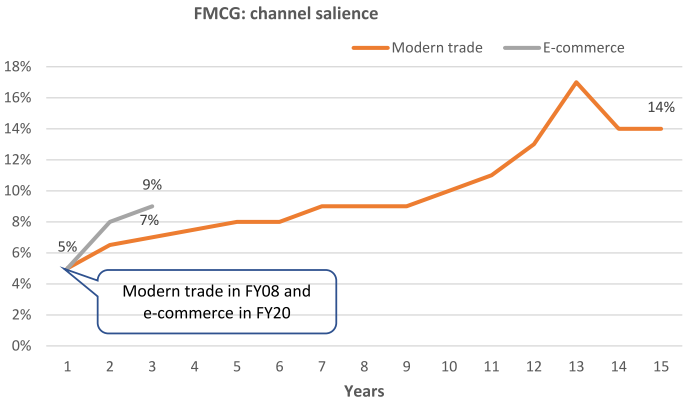
Source: Euromonitor, National Data Sources, Morgan Stanley Research estimates

Exhibit 108: Retail: Organized vs. unorganized share



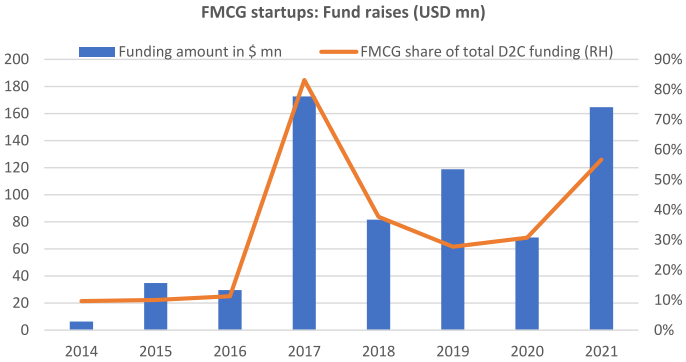
Source: Technopak estimates, Go Colours RHP

Exhibit 109: E-commerce share in FMCG revenues to continue to accelerate



Source: Company data, Morgan Stanley Research

Exhibit 110: D2C funding



Source: Inc42 Plus Analysis, Morgan Stanley Research

IndiaStack: A Technological Leap

IndiaStack is a decentralized, low-cost public infrastructure with many use cases – some prominent ones include ONDC, OCEN and Aayushman Bharat. In our 2017 Bluepaper 'India's Digital Leap – The Multi-Trillion Dollar Opportunity', we talked about the JAM trinity (Jan Dhan, Aadhaar, Mobile internet penetration) and GST as the two key reforms that would cause a growth inflection. The three most prominent use cases that the government is in the process of testing and rolling out city by city are: 1) open network for digital commerce (ONDC), 2) open credit enablement network (OCEN) for promoting credit based on cash flow lending, and 3) the National Health mission for healthcare and insurance. **The ONDC and OCEN stacks will drive decentralization, democratization and the disaggregation of services**.

Implications: We see the ONDC and OCEN initiatives as 1) additive to the existing market (expanding the overall pie of digital commerce/digital lending), 2) providing room for innovation which would attract growth capital (in 2021 India saw PE/VC inflows worth US$40bn into its tech ecosystem), and 3) having a disruptive effect on existing platform-based business models. The existing platforms within e-commerce categories that are more likely to be adversely affected are consumer electronics, ride-hailing, and food delivery, while the ones that will see a smaller impact are fashion, beauty, and healthcare.

Key challenges: We see execution challenges, especially for initiatives like ONDC in its ability to 1) bridge the trust deficit between sellers and buyers, 2) provide real-time availability data for inventory management. We also see a risk of the sector becoming more regulated once ONDC takes off.

India – the decade ahead: By 2031 we expect internet penetration to improve to 65%, online shopping penetration to increase to 70%, digital commerce penetration to increase to 11-12% and millions of merchants that are filing GST regularly to benefit from digital commerce and ease of getting credit.

Digital India: The Digital India program was launched by the government in July 2015, with the intent of making India a digitally empowered society, similar to other leading nations, by leveraging technology as a growth engine. The process of digitization aims at creating an inclusive and transformative public good, which will be crucial for India to take off into the next phase of growth. It aims at ensuring last-mile connectivity, adding value by catalyzing innovation, generating efficiency and transparency so as to allow its multifarious benefits to permeate into each strata of the society to usher in an era of high productive growth.

India has made rapid strides in adopting digitization: The fundamental backbone of India's digitization is built on IndiaStack, which has three layers: 1) the identity layer, backed by Aadhaar, 2) the payments layer, which allows paperless and cashless payments to anyone, anywhere (backed by bank accounts), and 3) the consent and data empowerment layer, focusing on securely sharing data (which is usually done on phone-based applications.)

The foundation of these three layers are application programming interfaces (APIs) created using public infrastructure and private innovation. These APIs can be employed across different use cases to make different marketplaces to meet the requirements of consumers.

Over the last six years, the digital payments ecosystem in the country has grown multifold, driven by the government's commitment to encouraging digital inclusion so as to attract private participation in investment and innovation. Indeed, after Indonesia, India saw the fastest growth in digital inclusion over 2014-2017, as it broadened to include several schemes within its ambit such as Digilocker, e-KYC, GSTN, etc.

Background of foundational layers built in the past decade

2009-2017:

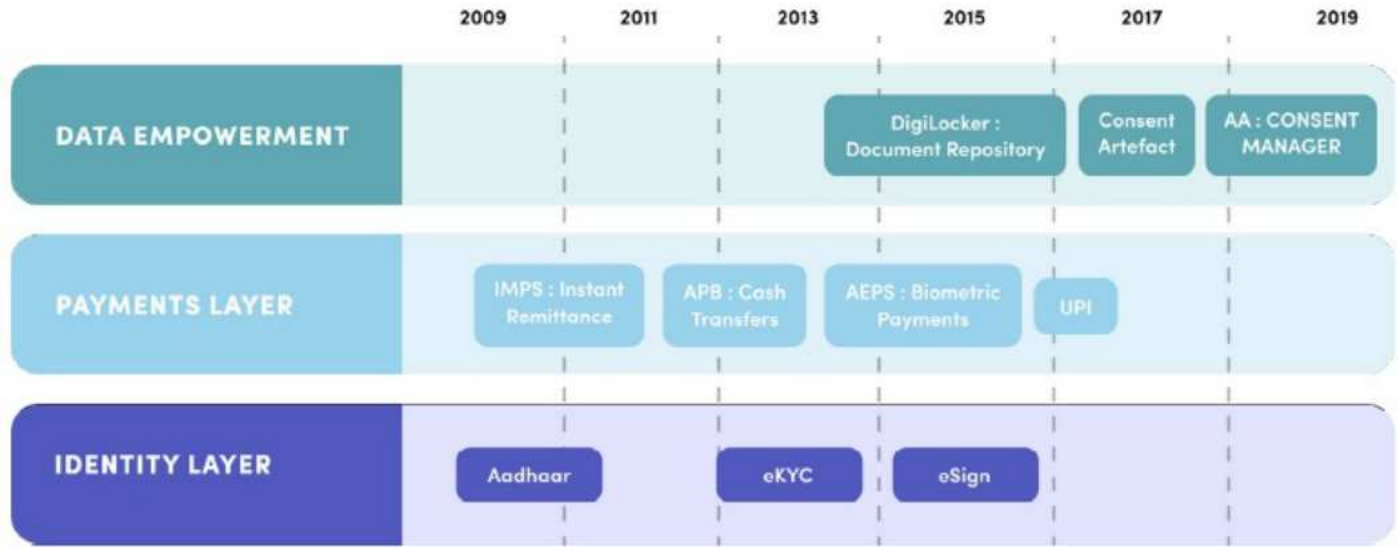
Even though the journey began in 2012, the foundation was laid on Aadhaar, which was introduced in 2009. Through 2012 to 2015 IndiaStack was built on the JAM initiative. During this time APIs that were rolled out included IMPS for instant remittances, APB for cash transfers, Aadhaar for eKYC, DigiLocker as a document repository, and AEPS for biometric payments, eSign and UPI.

Also, during 2017 the government was working on what we now know as the data empowerment and protection architecture (DEPA), which was officially launched in 2020.

Since 2017:

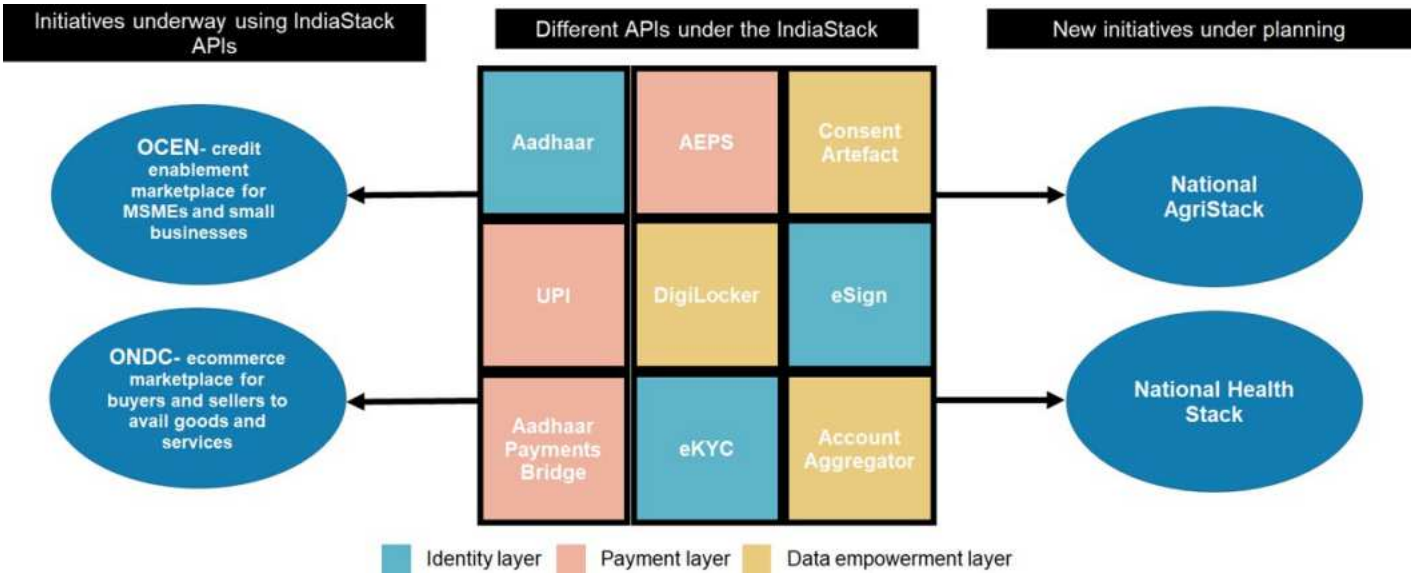
APIs on eKYC and eSign under the identity layer, APIs on UPI, Aadhaar Payments Bridge and AEPS: Biometric payments under the payments layer and the consent artefact (DEPA architecture), APIs on DigiLocker and Account Aggregator in the data empowerment layer.

Exhibit 111: APIs launched under IndiaStack over the last decade



Source: DEPA report August 2020, Morgan Stanley Research

Exhibit 112: Ecosystem under IndiaStack and use cases developed using them



Source: Morgan Stanley Research

Taking stock of digitization trends so far

Direct Benefit Transfer

In 2013, the government undertook the Direct Benefit Transfer (DBT) scheme to re-engineer the dissemination of welfare benefits and services so as to ensure a targeted delivery system while simultaneously avoiding fraud and leakage.

Reviewing the performance so far: Cumulative DBT transfers since F14 stand at Rs25.7trn. In F22, a total of Rs6.3trn was transferred as DBT with cash transfers accounting for Rs2.7trn and in-kind transfers totaling Rs3.6trn The number of beneficiaries peaked in F21 for both cash (980mn) and in-kind (819mn) transfers at 1.8bn, up 24% from F20.

State-wise performance rankings depict Haryana as leading on overall DBT performance, followed by Uttar Pradesh, while Assam and West Bengal are the two weakest states.

Currently, DBT comprises 318 schemes managed by 53 ministries. Assessing inter-ministerial trends on performance metrics shows the Ministry of Housing and Urban Affairs outperforming other ministries on the following metrics:

- Performance in end-to-end digitization
- Performance in use of Aadhaar and mobile
- Performance in portal and reporting compliance
- Performance in reporting of estimated savings.

The Ministry of Housing and Urban Affairs is followed closely by the Ministry of Petroleum and Natural Gas and the Ministry of Youth Affairs, while the Department of Scientific and Industrial Research was the laggard.

Unified Payments Interface

The Unified Payments Interface was launched in 2016 to enable seamless financial transactions across banks, around the clock. It allows orderly fund routing and merchant payments through a single mobile application which can be operated as per requirement and convenience.

Commendable surge in adoption and adaptation of the system: The pandemic played an instrumental role in fostering greater adoption of the interface as monthly transactions surged to an average of more than Rs3trn from Apr-Dec 2020 while they tracked below Rs2trn in 2019. The momentum continued in 2021, indicating greater adaptation to it as transactions and have continued to accelerate even in 2022. Indeed, the volume of UPI transactions zoomed to an all-time high of Rs11.1trn in September 2022.

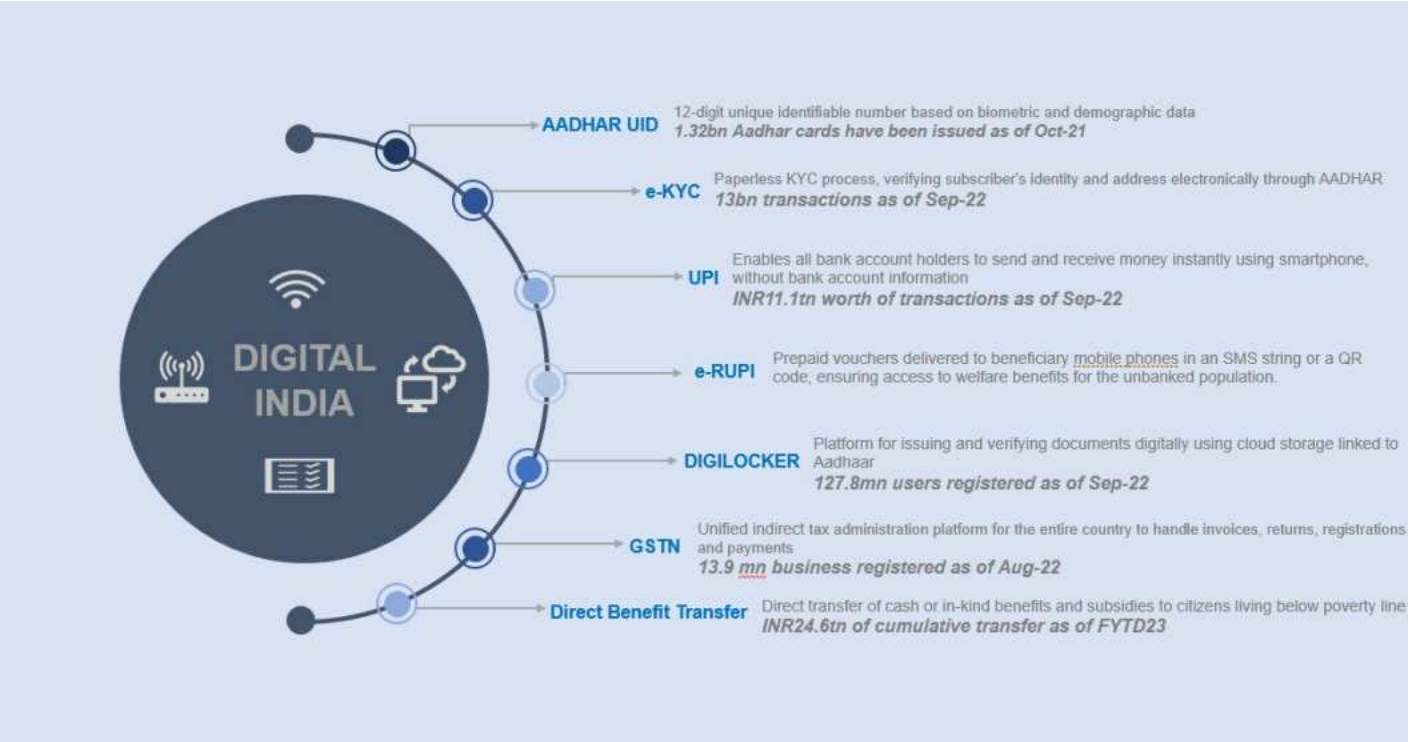
e-RUPI

The government launched e-RUPI, a person-specific and purpose-specific payments system, in August 2021 with the objective of leveraging the digital infrastructure for ensuring leak-proof delivery of its welfare schemes. e-RUPI was built by the National Payments Corporation of India (NPCI) on the UPI platform and has onboarded banks as issuing entities to allow a seamless one-time payment mechanism.

Design structure of e-RUPI envelops unbanked population: e-RUPI are like prepaid gift vouchers that will be delivered to the mobile phones of the beneficiaries of welfare schemes in an SMS string or a QR code. These vouchers will be redeemable at specific accepting centers. e-RUPI vouchers won't require the beneficiary to either download a specific mobile app or even have an internet connection. These vouchers will not require the beneficiary to have a bank account, either, thus ensuring access to welfare benefits for the unbanked population. The vouchers can be used for a single transaction and are non-transferable.

Beneficial for both consumers and corporates and merchants: In our view, the introduction of e-RUPI marks a milestone in ensuring the ubiquity of the benefits of digitization. The key ways in which e-RUPI will prove to be useful are 1) enabling cost reduction for merchants as no physical issuance or digital presence is required and 2) secure and hassle-free for consumers since it is contactless with a quick redemption process.

Exhibit 113: The components of Digital India



Source: Morgan Stanley Research

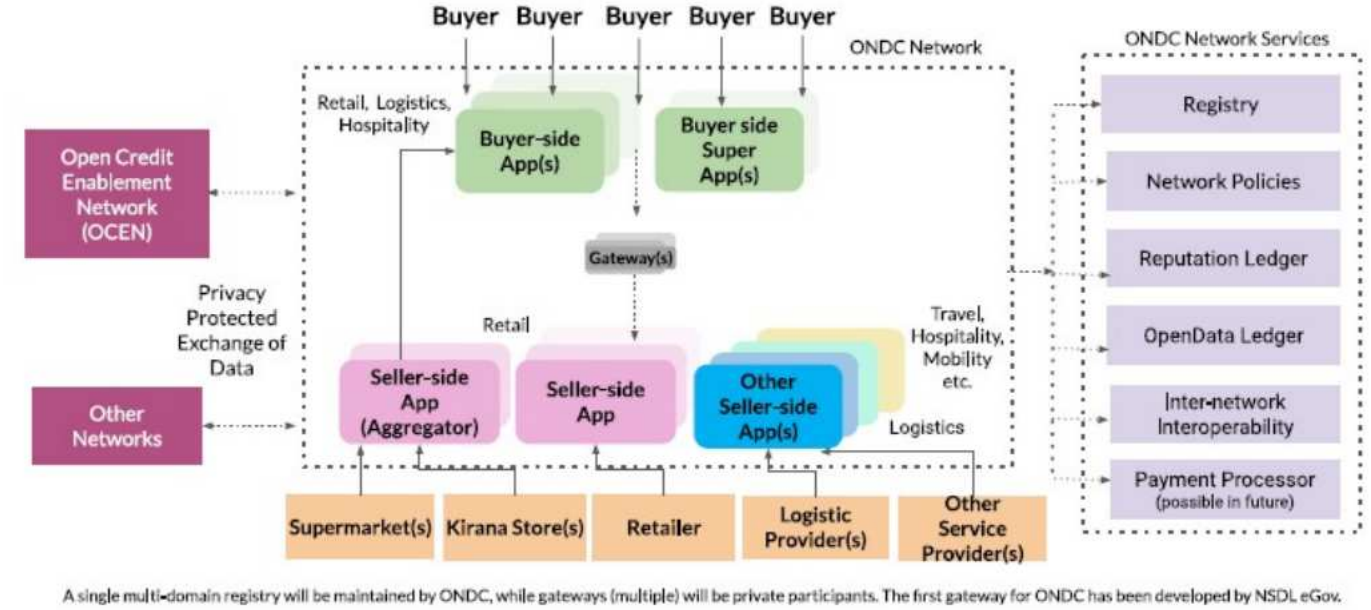
Similar to Aadaar and UPI, which are use cases built for a mass scale, the government is working on initiatives in the commerce and credit space using the building blocks of APIs already created under IndiaStack

What is the Open Network for Digital Commerce (ONDC) marketplace model?

ONDC is a network based on a protocol which is built using open source methodology and open specifications. A protocol is a set of rules for transmitting data between electronic devices in a pre determined structure (of how to send it and how to receive it). Simply put the ONDC's open protocol is similar to how Simple Mail Transfer Protocol (SMTP) works for exchange of e-mails between two different domains. Similarly, the open protocol established by ONDC will do the same thing for digital commerce. Businesses/sellers can register with the open protocol which will allow them interoperability across platforms that choose to become compatible with the open network. This initiative is the first of its kind globally and there is no historical precedent for the trajectory it could take.

The exhibits below show the difference between the platform approach and protocol approach when doing a commercial transaction online.

Exhibit 114: The technology rails are built using Beckn protocol and a single multi domain registry will be maintained by ONDC



Source: NITI Aayog, Morgan Stanley Research

In a platform approach, the seller has to get listed on a particular platform which has its own proprietary protocols of how information is exchanged between a buyer and seller. In order to complete any transaction, both the buyer and seller will have to be present in the same platform which will facilitate the transaction using its own proprietary technology. This approach is akin to creating a proprietary ecosystem which works well for participants registered with that platform. However in this case if Seller S registered on platform P will not be able to do any transaction with Buyer B (registered on platform Q).

In an open protocol approach, there are two parties:

A buyer of goods and services – the buyer can be an individual consumer or a business who is looking to buy services such as logistics services

A seller of goods and services – it can be an individual seller who has inventory of physical goods or a business who has ability to provide services such as logistics services.

The seller of goods and services has to be registered with ONDC, through which its inventory gets broadcast using an open network to the potential buyer. Taking an example, a consumer can search for a particular goods or services on any platform where he/she is registered and the platform would throw options of the potential sellers who can supply the same and are registered with ONDC. The seller may or may not be registered on the same platform where the buyer is registered. This is possible if the seller is registered with ONDC and the buyer's platform is compatible with ONDC. With this, the need for any seller to register on a particular platform to acquire users goes away and it becomes discoverable to a large number of users across many buyer platforms that are compatible with ONDC. On the other hand, the buyer platforms get access to a large number of sellers along with the option to select logistics services from a multitude of players for delivery. So, unlike a platform approach which bundles a variety of services using proprietary technology, under the open protocol, the transaction gets unbundled (into discovery and delivery services) although the same can still be completed seamlessly using the technology backbone of ONDC.

Exhibit 115: Key differences between a platform and an open protocol approach for commerce

	Key Parameters	Platform	Vs	Protocol
1	Democratization	Centralized		Decentralized
2	Technology	Proprietary technology and protocol		Open network based on open protocols built for common use
3	Interoperability	Closed loop and ecosystem		Interoperable and plug & play
4	Disaggregation	Bundling of services		Unbundling of services
5	Data ownership	Belongs to central intermediary		Data ownership of customers belongs to individual sellers

Source: Morgan Stanley Research

Exhibit 116: Companies can play multiple roles via ONDC

Source: ONDC, Quality Council of India, Morgan Stanley Research

Exhibit 117: Over 30 companies are in active discussions to align with ONDC, some of which have already chosen to become early participants

Source: ONDC Masterclass, Deck, Niti Aayog, Morgan Stanley Research

Exhibit 118: Some of the existing companies that have chosen to become early participants in the ONDC network

Source: ONDC, Morgan Stanley Research

Who runs ONDC and what will be its role? ONDC was incorporated on 31 December 2021 and is registered as a private, not-for-profit company. ONDC is not an application but a network which will act as an enabler of digital commerce through large-scale participation by small mom-and-pop sellers across the country. The advisory council comprises Infosys co-founder Nandan Nilekani, members of other prominent bodies such as NPCI, NSDL, National Health Authority, Retailers Association of India (RAI), and Confederation of All India Traders (CAIT), among others.

ONDC's role will be to build protocols that will be all pervasive and standardize all operations for cataloguing, inventory management,

order management, and order fulfilment. ONDC will orchestrate interactions with the open network and set ground rules for transactions (such as counterparty rules, obligations under dispute resolution, etc). ONDC aims to help merchants on dynamic pricing, inventory management, and optimization of delivery costs.

Democratization

a) Entry barriers to come down for small businesses to go digital, leading to an inflection point for the e-commerce market in India

Over the last few years large horizontal e-commerce platforms have brought over 1mn sellers onto their platforms, accelerated by Covid. Even with this the penetration of small medium and micro businesses that have gone digital (for commerce) is only 1.6%.

The open network protocol for digital commerce, if successful, would remove friction and encourage participation from a large number of small sellers and could be the inflection point for merchants to go online. This will bring a wider selection of goods at the hyperlocal level and would create a network effect supporting the conversion of internet users into online shoppers.

Disaggregation

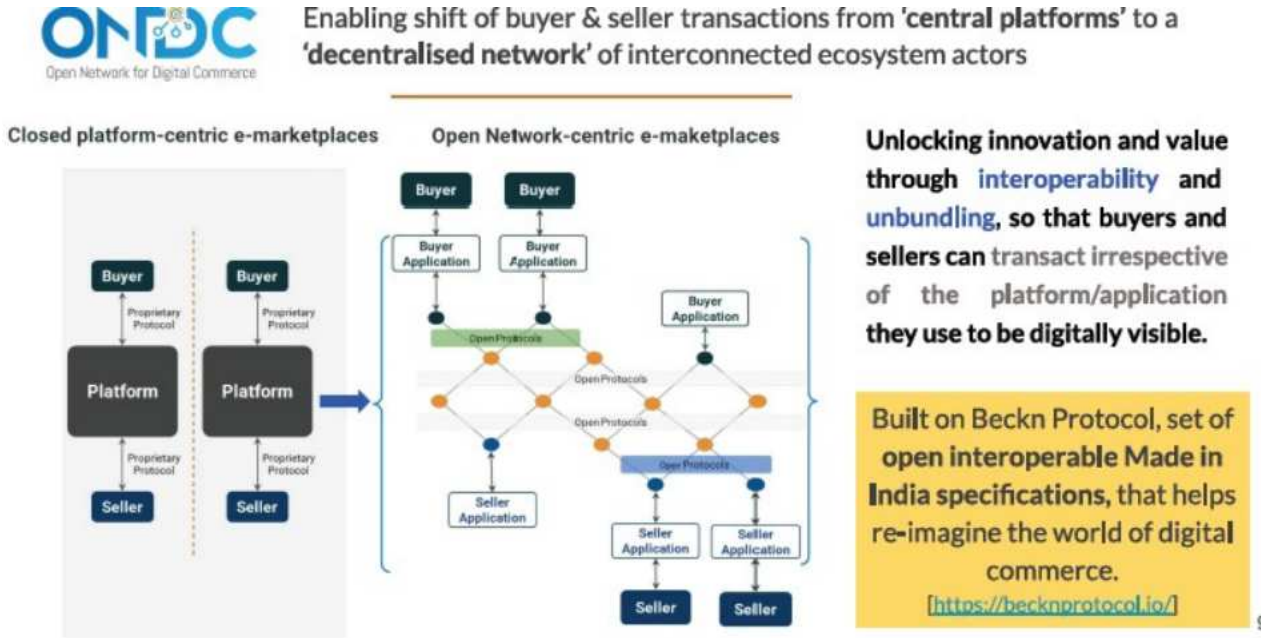
b) Unbundling and rebundling of services driving massive innovation and leading to emergence of new business models

E-commerce activity can be broadly summarized as a combination of i) discovery, ii) payments and iii) logistics. The platforms have invested in building an ecosystem approach for solving the problem of online commerce. An ecosystem approach helps in bridging the trust deficit between a buyer and seller and helps in improving the customer experience. In away platforms have been bundling various elements of online commerce together to provide one seamless experience to customers.

In an open protocol approach, the discovery, payments and logistics can be done facilitated without necessarily being bundled by one intermediary. Any seller registered on ONDC network can be discovered by buyers across multitude platforms which are aligned to ONDC network. Once an end consumer has discovered product, he/she can place the order which will go directly to the seller and payment can be made directly to the seller. For logistics, the platform that owns the consumer, can show either buyer an option to choose logistics services and pay for the same or at the back end the seller might choose logistics services and build the cost of the same in its pricing. These can be done on a real time basis using the open network protocol thereby necessitating the need for any one intermediary to control all elements of online commerce.

We expect new possibilities to emerge out of this disaggregation and new bundling of services can happen in a plug-and-play approach. We expect this to promote innovation and support the emergence of new business models which will be needing growth capital.

Exhibit 119: Platform vs open protocol approach: Bundling vs unbundling of services



Source: NITI Aayog, Morgan Stanley Research

Decentralization

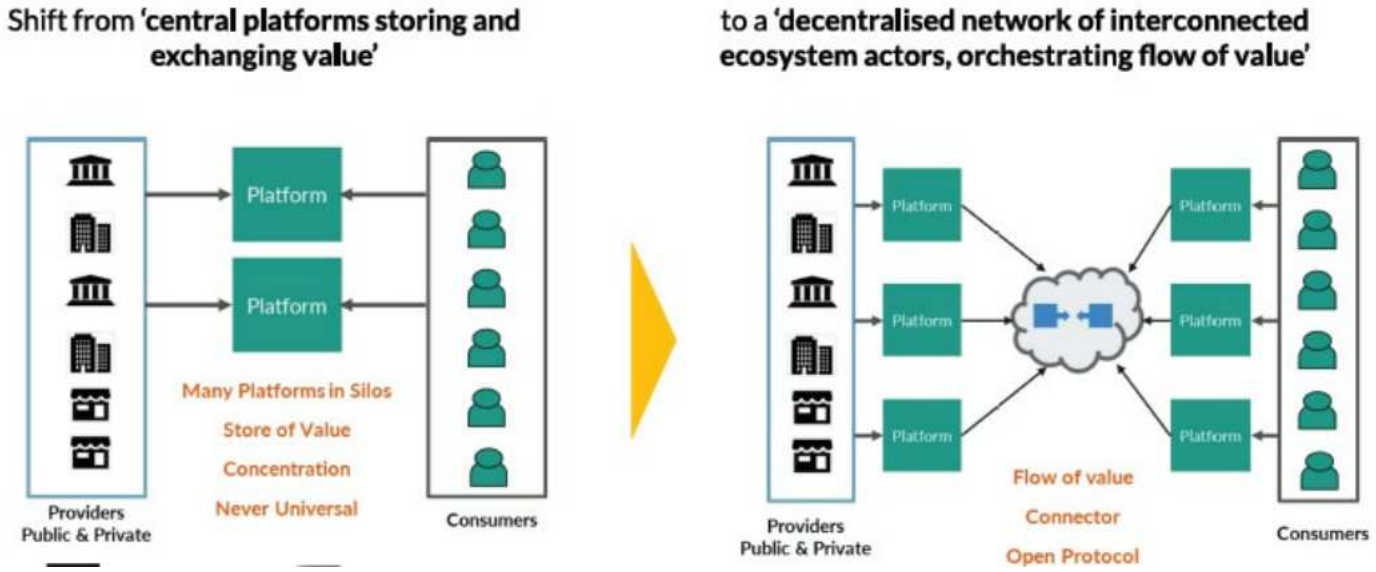
c) Closed loop vs interoperable

The platforms are closed loop in nature. This implies a seller listed on a particular platform can only sell goods/services to the users/customers of that platform. The seller will have to comply with the policies set by the platform with respect to commissions, storage of goods in advance at warehouses of the platforms, return policies etc. In other words, the seller operates within the defined boundaries of a platform. The transaction is end to end controlled by the platform which implies data pertaining to end customers also belong to the platform and not to the end sellers.

In an open network system, the seller doesn't need to be registered in any platform. The seller just needs to register along with required data in the ONDC network and this will allow discoverability of the seller across any platforms that are compatible with ONDC network. The commerce transaction of discoverability, payment and logistics services gets seamlessly executed using the open network protocol. The protocol allows decentralization of transaction and exchange of value of goods/services across multiple parties in one go. This structure makes the merchant's availability across platforms without getting listed in any one platform and provides inter-operability in the network.

In simple words, the open network can have a disruptive effect on the existing platforms that tend to operate a centralized closed loop ecosystem.

Exhibit 120: Platform vs protocol approach: Centralized vs decentralized network



Source: NITI Aayog, Morgan Stanley Research

Key challenges

1. Bridging the trust deficit

Online transactions appear straightforward but are a complex set of activities bundled together which are executed seamlessly by a platform. In a closed loop ecosystem the platform owns the customer and also all legs of the transaction, which helps it bridge the trust deficit between a buyer and seller. In simple language, the buyer comes to the platform as it takes care of a) genuineness of the product, b) security of the payment made towards the product, c) easy returns in case of any mismatch between what is promised and what is delivered, and d) timely delivery. The platforms invest in technology, develops an incentive system with curation/rating of sellers, takes care of the returns, and builds warehouses/first mid and last mile delivery infrastructure to ensure timely delivery.

In an interoperable system, there is no intermediary taking responsibility for all the above items, hence buyers need to be able to trust small, independent sellers. Further, in cases where the transaction doesn't go through in the desired manner, there must be a way to resolve disputes in an automated fashion.

2. Digitization of small sellers' inventory is a difficult problem to solve

For the open network to work effectively, sellers need to upload their inventory data to the ONDC network, which can then be the basis for broadcasting these sellers depending on search queries from buyers across various platforms. A lack of digitization at the small sellers' end could be a key hindrance for them to sell online. If they go digital without a proper record of their inventory, it could lead to false discovery and transactions may not get consummated if sellers are not able to meet the demand. We believe this is not an easy problem to solve which is why marketplace models have not really succeeded in categories such as grocery where the number of SKUs is too large and small retailers cannot fulfill the demand, leading to a poor consumer experience.

3. Risk of sector becoming overregulated

One of the government's key objectives in launching an open network for digital commerce is to ensure a level playing field for small sellers. The argument in favor of an open network approach is that it will help in reducing the cost of doing business for small sellers and will ensure their participation.

With this intention, we see a risk of the following happening:

- Potential for a new 'e-commerce regulator' with greater scrutiny over the sector
- Capping of take rates which a platform can charge to merchants in order to ensure more participation from small sellers
- Greater scrutiny of related-party transactions especially between marketplace, seller and the wholesaler from which the seller procures.

Assessment of categories under which platforms could see disruption from an open network model

An online commerce transaction is a complex set of activities bundled together. Depending on the type of product/service sold, a platform solves for multiple problems at the same time, such as:

- No. of SKUs: The larger the number of SKUs, the greater the chance of a lower fill rate, and the problem becomes even more complex with pharmaceutical products, where the choice of substitute doesn't rest with the seller or consumer.
- Standardization: The lesser the degree of standardization of products/services, the greater the challenge to bridge the trust deficit between buyer and seller.
- Genuineness of supplier: This matters a lot, especially in products where the possibility of counterfeits is high, such as the beauty segment.
- Complexity of buying process: Categories like beauty and fashion require a large number of visits before an order is placed, which increases the complexity of the buying process.
- Returns: The higher the percentage of returns in a category, the greater the complexity which any platform is solving for.
- Average ticket size: As average ticket size increases, consumers' trust in an unknown seller decreases.
- Timely delivery: This is quite important for hyperlocal categories like food and quick commerce, where platforms take the responsibility of the timely delivery to consumers.

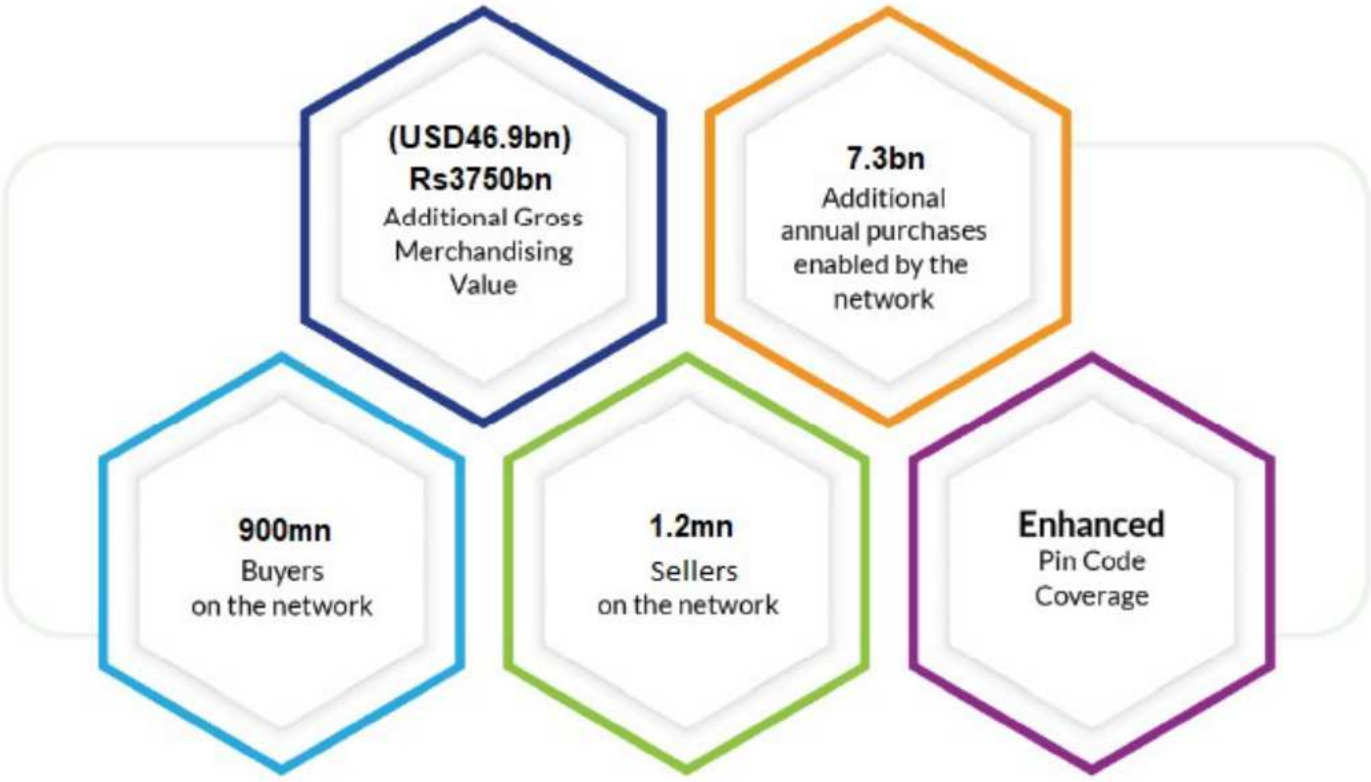
Exhibit 121: We expect various online categories to have a differentiated potential impact from the ONDC rollout based on the features of the category

Categories	Ride hailing	Food	Electronics	Grocery	Travel	Beauty	Healthcare	Fashion
No. of SKUs/Fill rate								
Standardization of products								
Genuineness of supplier								
Complexity of buying process								
% Return								
Average ticket size								
Overall								

Decreasing potential for disruption by introduction of ONDC

Source: Morgan Stanley Research

Exhibit 122: ONDC's targets for the next five years



Source: ONDC Strategy Paper, Morgan Stanley Research; Note: We have used USD/INR exchange rate of Rs80

2) Open Credit Enablement Network (OCEN):

OCEN, pronounced as O-KEN, is an initiative by IndiaStack to ensure easy credit is accessible to MSMEs and small businesses through loan service providers (LSPs). An LSP is any customer-facing digital platform that can source borrowers (e.g., a food delivery app, a tax filing app, an e-commerce platform, or a fintech platform). The platform could be a web app or an Android app that already has a core offering and customer base. The LSPs will have the OCEN APIs on their platform which will enable borrowers to receive credit seamlessly and within a short duration to meet their business requirements. Lenders who will be onboarded on the LSP platform will get a new area/set of borrowers, while the LSPs will benefit from a new channel of business on their platform which until now had high entry barriers.

How does the OCEN framework work?

OCEN protocol network will be embedded on the platform: OCEN contains an API for each step of the lending lifecycle. These APIs are embedded in the LSP platform and help connect the LSP platform with the platform of the lenders who are onboard. These lenders can then provide credit.

3) Account aggregator framework:

Account aggregators (AAs) are a new class of NBFCs under DEPA with inter-regulatory approvals by RBI, SEBI, IRDAI, PFRDA, and FSDC. However, like all NBFCs, it is RBI which licenses and governs rules for AAs. As of today many AAs have received in-principle approval from RBI to begin operations, and four have received operational licenses.

- **Brief model of AA framework:** AAs, also called user consent managers, do not have access to personal data but serve as a conduit for encrypted data flows. In simple words, they will act as middlemen in receiving consent from users of their personal data which will then be shared from the financial information providers (FIPs) to the financial information users (FIUs). This data being shared will be end-to-end encrypted and the model will allow data to move freely and securely to democratize the market.

4) Ayushman Bharat Digital Mission

The Ayushman Bharat platform will help to create a digital healthcare ecosystem which will bridge the gap amongst various stakeholders – hospitals, clinics, labs, pharmacy, and patients through the integration of technology and healthcare on a single platform. Through the launch of the Ayushman Bharat Digital Mission the government will drive the essentials of a) digitization of patients' medical records, b) digitization of institutions, and c) ease of financing hospital charges offered through various government schemes.

Status of the program thus far: The pilot implementation was conducted in Aug-Sep 2021 across six union territories: Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Ladakh, Lakshadweep, and Puducherry. **So far, 23,000 hospitals have been empanelled under the scheme, 40% of which are from the private sector. There are 100k people on the platform.**

Exhibit 123: The APIs which are part of the protocol

Source: Finbox.in, Morgan Stanley Research

National Digital Health Mission (ABDM)

Source: Government of India, National Health Authority

Digitizing health

Backdrop: The Ayushman Bharat Digital Mission, or ABDM (previously known as the National Digital Health Mission) was launched in September 2021. This scheme is being implemented to create a digital healthcare ecosystem which will bridge the gap between various stakeholders – hospitals, clinics, labs, pharmacies, and patients. It is primarily an integration of technology and healthcare on a single platform to significantly increase healthcare access and financing for the weaker section. The Digital Health Mission is a part of the wider Digital India program, which has thus far resulted in 1.3bn Aadhaar users, 1.18bn mobile subscribers, 800mn internet users, and 430mn Jan Dhan bank accounts.

Healthcare ecosystem: As a part of the National Digital Health Ecosystem, a person or an institution will either become a Health Information Provider or a Health Information User. The government's objectives in launching ABDM are essentially three-fold:

1. **Digitization of patient's medical records –** Integrating the medical history of an individual into a 14 digit Unique Health ID Card. All diagnostic tests, medicines prescribed, doctor visits, hospitalization records etc, will get recorded on this digital data storage. Since there will be interoperability of data across hospitals, it will connect the digital health solutions of hospitals across the country with each other.
2. **Digitization of institutions –** The Ayushman Bharat platform will maintain a digital register of medical practitioners, hospitals, and clinics. The should enable a host of facilities such as digital consultation with doctors, booking appointments with diagnostic laboratories, home delivery of medications and integrating health insurance payments for these services.
3. **Ease of financing –** Presently, poor patients are being treated in the hospitals under various government schemes at subsidized rates after due diligence. This process should get a lot simplified (10-15% of listed hospitals are such scheme patients, a bit higher in government hospitals).

Key constituents of ABDM scheme – There are three key registries of ABDM: 1) Health ID, 2) Health Professional Registry (HPR), and 3) Health Facility Registry (HFR) and digital infrastructure for data

exchange. An Android-based app called NDHM Health Records (now ABDM) was launched to facilitate voluntary participation by users to view, link and share medical records among different stakeholders with their consent.

Status of the program thus far – The pilot implementation was conducted in Aug-Sep 2021 across six union territories – Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli and Daman & Diu, Ladakh, Lakshadweep, and Puducherry. **So far, 23,000 hospitals have been empanelled under the scheme, 40% of which are from the private sector. There are 100k people on the platform.**

Likely benefits – This program will be a game-changer and provide timely and hassle-free medical care to people all over India. Health experts said the biggest advantage to users would be that they would not have to repeat certain investigations since there would be a unified format and standards in the digital system. The digital health mission would also ensure the flow of information to insurance providers. The PM asserted that the initiative would play a very important role in eliminating the medical problems of the poor and the middle-class section of society since disease is one of the key causes of poverty in the country. The strengthening and integration of the health infrastructure also bode well for the outlook of the tourism sector.

Key challenges – A key challenge highlighted by health experts is the ability and willingness to implement a digital ecosystem in all of India's health care services and to shift away from old habits such as always visiting clinics in person, maintaining physical records, etc. Some experts, however, have raised privacy concerns around the digitization of health records, especially in absence of a data protection law or a data protection authority.

Impact on health insurance and life insurance delivery in the country

Wider adoption of digital health IDs and the consequent buildup of health-related data on individuals could usher in a new era in health insurance underwriting, delivery and coverage.

Below we discuss how digital health ID could drive stronger insurance infrastructure and as a result boost insurance industry growth:

- Higher breadth and depth of data availability on customers --> better portfolio risk mitigation --> better predictive analytics --> better underwriting, i.e. more micro-segmentation and pricing differentiation --> higher penetration

Health data on customers is the core input for a health insurer. However, this is subject to disclosure by customers, which is unlikely to be exhaustive. Further, insurers usually have very low prospective information on existing customers after the point of onboarding till a claim has been lodged. This implies a lesser degree of knowledge of the risk evolution of the existing book.

A continuous automated stream of health data on existing customers can enable better risk tracking in a cost-efficient manner along with actions to mitigate portfolio risk (reinsurance, changes to composition and pricing of new business etc.)

Also, the availability of data over a large and diversified cohort of customers for a longer period of time can result in better predictive analysis and create room for more micro-segmentation and pricing differentiation. While this could entail higher premium costs for higher-risk customers, it could result in lower premiums for healthier customers, thereby potentially incentivizing them to buy insurance sooner, thereby helping insurance penetration.

- Life insurers could also take advantage of this data for better underwriting of new business as well as monitoring and managing risks in the back book and providing higher comfort to reinsurers

The reliance of life insurers on reinsurers for the reinsurance of their term life business is higher in proportion to health insurers. In recent years, reinsurers have been tightening underwriting norms and pricing; and Covid-19 has added to the uncertainty. In the case of life insurance, there is little follow up information on customers after that what is collected at the time of initial underwriting. Linkage to digital health id, could not only mean more external information on customers (which can be cross verified with customer declaration) at the time of underwriting, but also enable a continuous flow of information in the following years. This will help quality of new business underwriting, will help monitor back book risks and provide rich information thereby potentially creating more comfort with and driving better terms with reinsurers.

Today, we see the incidence of wellness driven customer engagement largely only in health insurance products. With higher information availability, life insurers could also eventually start driving wellness initiatives with customers, which could help mitigate, measure and manage risks.

- Higher data integrity --> reduction in fraud --> lower incidence of low / selective disclosure of pre-existing medical conditions --> reduction in insurance costs for the broader universe

An incidental business cost for all insurers is fraud and selective or low disclosure that results in higher premiums for all customers. Linking medical records and claims to a unique digital health ID, should help reduce these issues significantly. Insurers could pass on these benefits to customers in the form of lower premiums, or choose to partially reinvest the same to boost penetration, launch new innovative products for riskier customer cohorts, etc. that drives further data gathering and experience.

- Better predictive analytics given availability of data and hence pricing models for patients with pre-existing / difficult medical conditions, patients beyond a certain age etc. --> create new markets

High claim incidence and lack of data for predictive analysis has resulted in lesser number of insurers venturing in to segments like senior citizens, individuals with certain health conditions etc. However, as data availability increases with digital health id, it might be possible to pool a larger number of customers with specific conditions, analyze them and quote a price to them vs. there being no market for them in the past

- Use of wearables --> focus on wellness and risk avoidance --> a win-win approach for both insurer and insured

In recent years, health insurers have started moving towards a wellness approach, whereby policyholders are encouraged to follow a healthy lifestyle, contribute data with respect to the same and also allow insurers to monitor them via wearable devices. In turn, insurers provide monetizable rewards and there is also potential to reduce premiums.

Such products could benefit further from data coming in owing to integration with digital health IDs.

More importantly, the wealth of data will enable insurers to move towards a risk avoidance approach, whereby they provide critical inputs to policyholders to reduce risks, which will in turn be a win-win for both the insurer and the insured.

- OPD insurance could also become a reality with higher data availability

OPD expenses constitute more than 60% of total health expenditure. However, these are not covered in insurance policies. A key concern is the risk of abuse given lack of standardization of expenses etc.

A fully integrated digital system, where by every step including the diagnosis, prescription, sale of medicines is digitally recorded and linked will bring accountability to the whole process and make OPD insurance more viable.

The new IRDAI Chairman has been focusing on ease of business and innovation. With business being now moved to a "Use and File" approach, the launch of new innovative products linked to digital health IDs, and incentivizing the same, could happen fairly quickly.

Once new innovative products linked to digital health IDs are launched, there would be a higher need for product and pricing revisions in the initial years. The flexibility being provided now to insurers should give them the necessary confidence to take some risks (as they can take corrective action in good time if needed) and also reduce the time to market of such products.

While it is tough to predict the timeline over which this will play out and hence quantify the impact in the near future, the opportunity size in both health insurance and term life insurance is huge; more importantly the positive ripple effects of broader financial security on aggregate consumption could be significant

As of F21, 63% of India's population was not covered by health insurance. The 37% of the population that had coverage largely had it on account of the government scheme and other forms of group insurance. 96% of the population was not covered by an individual or a family floater policy.

At 3.5% of GDP (2018 data), healthcare expenditure in India is among of the lowest in the world. Further, 63% of medical expenses incurred are out-of-pocket, with the rest being accounted for by health insurance and other private expenditure, thereby suggesting the need and growth potential for health insurance.

Similarly, from a life insurance perspective, Swiss Re estimates that India has one of the highest protection gaps in the world at over 80% of the required life insurance coverage. This represents huge growth potential given the size of the population and the economy.

Potential challenges

A key bottleneck to the insurance industry benefiting from linkages to digital health data is that in the initial years, the use of digital medical records for underwriting is likely to be on a consent basis and customers might not be willing to share data.

For faster adoption, the regulator / government will need to make sharing of digital medical records with prospective online insurers

mandatory, which might not be easy. The mindset / approach that the regulator / government will need to operate with here will be to compare health / life underwriting to credit underwriting, wherein customer consent is not required by the prospective lender to access credit bureau data once a customer has applied to a lender for a loan. *The role of the credit bureau in revolutionizing and growing consumer and SME credit while managing risks is well understood and appreciated. That should be incentive enough to allow insurers to access digital health databases.*

Alternatively, the regulator will need to allow insurers to launch a new set of products for those customers giving consent to the usage of their digital health records, with monetary or other incentives in place for them to do so. Companies will require scale to afford lower pricing to customers, since they would also have costs related to investments in technological infrastructure to use and analyze the digital health records.

How will digitization benefit the economy in the coming decade?

1. Fostering stronger economic growth: The ultimate objective of promoting higher digitization across all sectors and stakeholders (consumers, enterprises and government) is to be the linchpin to lead India onto the path of unprecedented productive growth. Consumers benefit from greater access to services and benefits while enterprises are likely to witness a surge in business activity with lower barriers to entry and a greater market reach. Furthermore, the symbiotic growth witnessed across sectors is a precursor for ample employment opportunities to utilize India's demographic dividend, thereby generating a virtuous cycle of sustainable economic growth. This is also in line with cross country evidence of digitization being a key enabler and facilitator of innovation, productivity and efficiency. Certainly, in our view, the process of digitization in India is likely to supplement the ongoing reform momentum of the government to provide a fillip to India's growth trajectory.

2. Greater tax buoyancy to feed into capital spending: Digitization has helped facilitate a transition of the economy from its current informal setup to a higher degree of formalization. This has been instrumental in not only fostering higher conformity by eliminating leakages and promoting greater transparency of operations but also simultaneously simplifying tax administration, which together augur well for the revenue outlook. The trend in existing data reiterates that the tax to GDP ratio for India accelerated to 11.4% of GDP in Aug-22, on a 12m trailing basis from 10% in F15, which can be partially attributed to the better compliance mechanism owing to digital adoption. The uptick in tax buoyancy is indeed indicative of the strengthening efficacy of the tax system, which in turn provides the government with confidence to accelerate capital spending without increasing the risk of fiscal slippages.

Risks and challenges to digitization

1. Digital literacy: One of the key obstacles in the way of ubiquitous and equitable dissemination of digital services is the prevalence of digital illiteracy, which to an extent is a by-product of the lack of literacy in the country. Lack of awareness of the extant digital mechanisms may prevent faster adoption and utilization which may in turn negatively impact growth outcomes.

The Indian government aspires to provide universal and affordable digital access, reaching unserved and underserved segments of people and facilitating new digital ecosystems. One of the primary initiatives by the government in this regard was the Pradhan Mantri Gramin Digital Saksharta Abhiyan with the objective of imparting basic digital literacy to those aged between 14-60 years in rural areas, to encourage digital penetration and bridge the regional digital divide. A target has been set to impart training to 1 member from every eligible household by 31 March 2022, and a total of 60mn people, which translates to roughly 40% of rural households. As of Oct-21, 53mn students had been enrolled under the scheme while 45mn had completed their training.

2. Lack of digital infrastructure: Another possible impediment is the lack of adequate infrastructure. Cumbersome regulatory and procedural requirements have hamstrung robust infrastructure development, which forms the cornerstone of efficient digitization.

In this light, easing and consolidating regulatory measures can potentially encourage and expedite the setting-up of infrastructure. Furthermore, private sector partnerships can help incentivize the government to undertake infrastructure investments that are fundamental to swifter digital growth. Continuous digitization of diurnal government operations is also likely to further propel the development of sophisticated digital infrastructure.

3. Data security: A critical offshoot of digitization (which attempts to amalgamate sensitive information for ease of operations) is the breach of privacy and security safeguards. The extensive presence of malware, fraudsters, and other dangers has the potentia to thwart or cripple the credibility of such digitization mechanisms. This requires the government to actively focus on developing infrastructure that simultaneously ensures the guaranteed security of data collection, storage, transmission, and ownership.

Data Democratization – The Coming Lending Boom

India's unique, open and safe digital architecture, coupled with favorable demographics and rising smartphone penetration, has driven a significant improvement in the penetration of financial services (including bank, payments and broking/MF accounts). What has been missing so far is a significant acceleration in credit growth, despite higher data availability. We believe the key catalysts are now falling into place, in particular the advent of new data-sharing architectures such as OCEN and AA. Further, the collaborative setup between banks and fintechs will drive significant synergies, we believe. Lastly, we expect macro to recover (from multiple mini-crises over the past decade) and not weigh on lenders' risk appetite (important as they try to drive loans to new-to-credit customers and try to achieve financial inclusion).

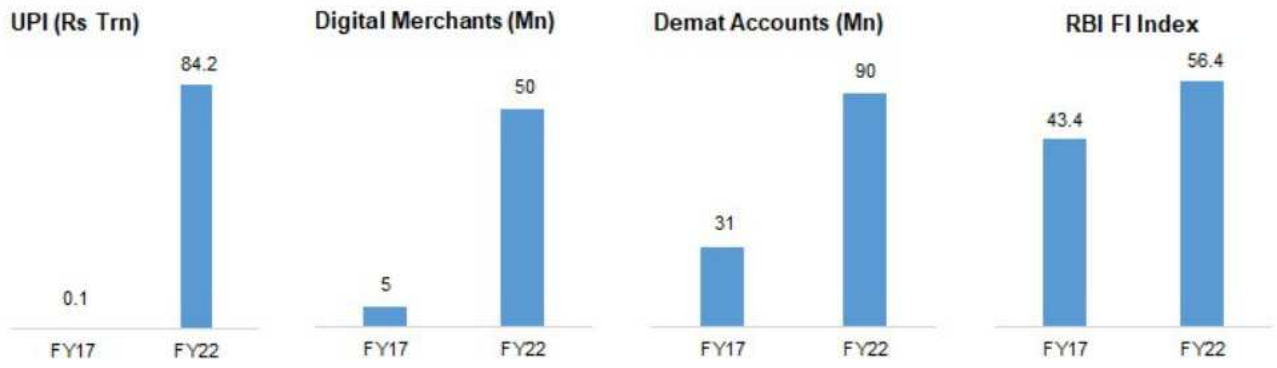
We expect retail/MSME loan growth to accelerate to a 19% CAGR over the next decade. This implies the share of retail/MSME loans will increase to 55% as of F2032 vs. 49% as of F2022 – this compares to 38% five years back. The improving loan mix towards retail/MSME segments should be positive for NIM progression at Indian banks and more than offset the moderation in loan yields that could happen given increased competitive intensity. Further, we expect the AA and OCEN ecosystems to help reduce costs and improve productivity. Indeed, we believe the above will help offset the fee income pressure Indian banks are seeing.

Large lenders across banks, NBFCs and fintechs are better placed to gain share in a profitable manner. While data will be available to all, the ecosystem approach at large players will help improve underwriting capabilities, reduce the cost of intermediation on a relative basis, and ensure much better cross-selling ratios.

India's unique public digital infrastructure has accelerated digital penetration in a number of financial services segments, but not credit

In The Next India: India's Digital Leap, we wrote about how the government and other stakeholders have built a unique, open and safe digital architecture. The government and central bank have been focused on rapidly formalizing and financializing India's economy. To this effect, they have built a universal biometric identification system (*Aadhaar*), initiated measures to boost financial inclusion (*Jan Dhan*), moved to a new fully online value-added GST system, and implemented real-time payment systems (*Unified Payments Interface – UPI and Bharat QR*). **These initiatives have created a superior tech architecture that is openly available**, reduced barriers to customer acquisition and, more importantly, data availability. Consequently, we have seen a sharp spike in various aspects of financial services, including bank account penetration, payments, demat accounts, digital merchant base, and so on.

Exhibit 124: The unique digital architecture in India has accelerated penetration in a number of financial services segments. This has increased data availability as well, and, coupled with data sharing rails, we expect credit to be the next leg of acceleration over the coming decade

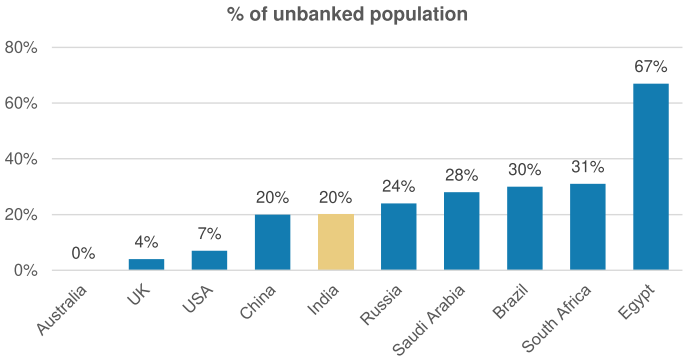


Source: RBI, media articles, Morgan Stanley Research

Fintechs have played a strong role as well, particularly in UPI payments. UPI payments are annualizing at US$1.5trn, or 50% of GDP as of 1HF23. UPI now accounts for 83% of retail digital payments in India and about 50% of retail merchant payments. This compares to a negligible contribution five years back. We expect overall retail digital merchant payments to grow at a 35% CAGR over next five years, led by UPI – this would amount to 42% of GDP and 71% of consumption expenditure in India by F27. Another big achievement has been the strong progress on GST and the significant data trail that is being generated on a monthly basis. Given this backdrop, we expect significant transaction-level data to be generated for retail customers as well as for small businesses.

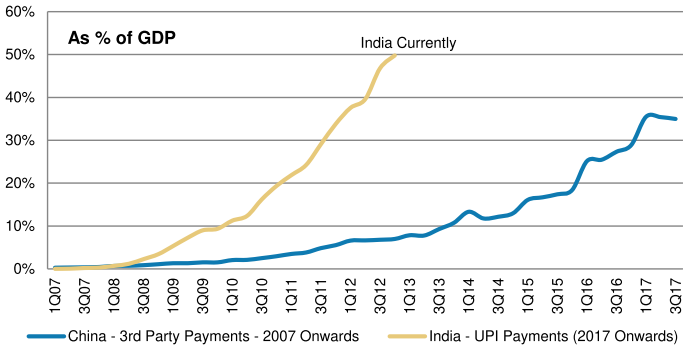
That said, MSME growth acceleration has lagged despite higher data availability. According to data from RBI, India currently has a funding gap of US$330bn and only 11% of MSMEs have access to credit. There are various reasons for this. India has a diverse class of businesses ranging from large organizations to public and private companies to MSMEs and small individual businesses. The traditional banking system is set on balance-sheet-backed risk assessment and long approval processes, which results in a lot of MSMEs and small businesses not getting access to credit.

Exhibit 125: Bank account penetration – India is better than a number of other EMs



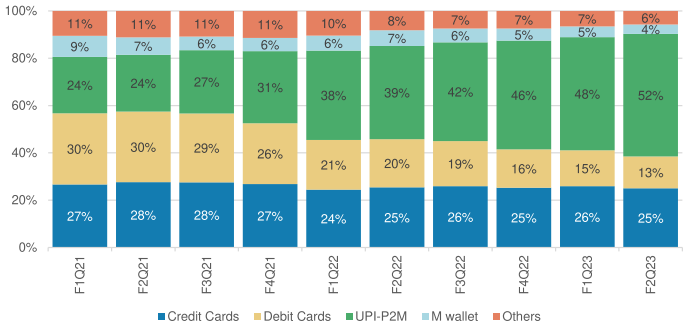
Source: Merchant Machine 2021

Exhibit 126: The pace of adoption of UPI in India has surpassed that of China's third-party payments as a percentage of GDP – UPI is now 83% of overall retail payments in India and this is generating significant data trails for Indian lenders



Source: RBI, NPCI, Morgan Stanley Research

Exhibit 127: Retail merchant payments: Share of merchant payments via UPI continues to rise – now at 52% of retail digital merchant payments in India



Source: RBI, NPCI, Morgan Stanley Research; Others include PPI (ex wallets) and Rupay Cards (both POS and E-com)

Exhibit 128: Digital P2M payments: We expect US$2.1trn by F27, implying a CAGR of 35%. This will further increase data availability for individuals as well as small businesses

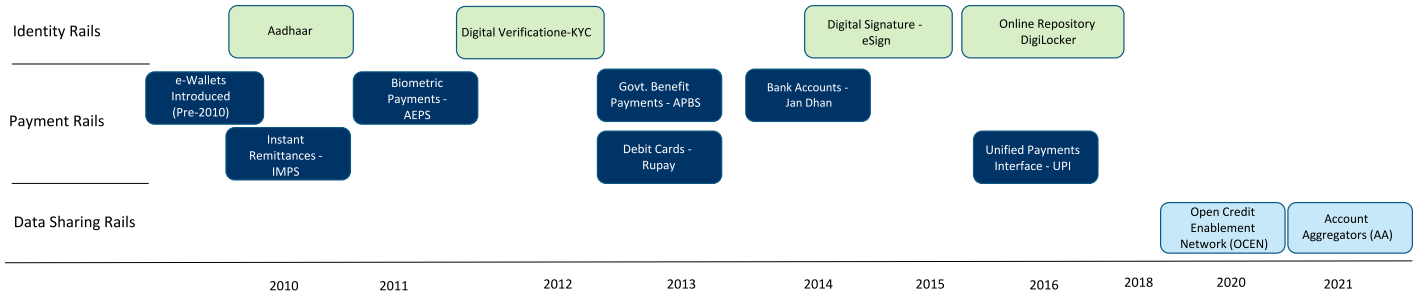
Retail Digital Merchant Payments - Market Size	F18			F22			F27			Growth 5Y-CAGR
	Rs.bn	US$bn	% of GDP	Rs.bn	US$bn	% of GDP	Rs.bn	$bn	% of GDP	
P2M										
--Credit Cards	4,592	56	3%	9,716	118	4%	35,335	430	9%	29%
--Debit Cards	4,548	55	3%	7,248	88	3%	19,593	238	5%	22%
--UPI*	77	1	0%	15,977	194	7%	102,713	1,250	25%	45%
--Wallets	1,085	13	1%	2,264	28	1%	5,336	65	1%	19%
--PPI/Others	988	12	1%	3,124	38	1%	9,347	114	2%	25%
Overall	**11,291**	**137**	**7%**	**38,329**	**466**	**16%**	**172,325**	**2,096**	**42%**	**35%**

Source: RBI, NPCI, Morgan Stanley Research estimates. Note: Exchange rate of US$1= Rs82.2. *UPI-P2M has been assumed at 7% of overall UPI as of F18.

We expect the credit leg to inflect as credit-enabling infrastructure falls into place

Over past few years, there has been significant groundwork in creating credit-enabling infrastructure, such as Account Aggregator and OCEN. We discuss them briefly below.

Exhibit 129: Data sharing rails have become stronger with account aggregators, OCEN and bank-fintech partnerships – this should drive exponential growth in digital lending over the next few years



Source: Jandhan, Aadhaar, NPCI, Morgan Stanley Research

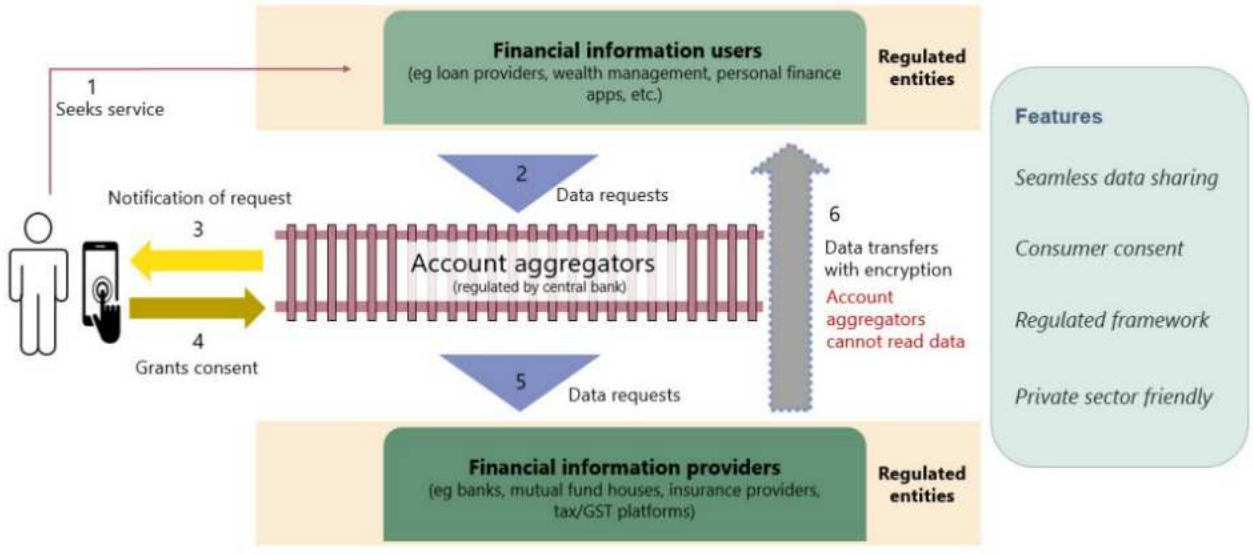
Account aggregator framework – An introduction

What is an AA framework? It is a data sharing system giving individuals greater access and control over their financial records, which sit with various institutions in silos. For fintech companies and lenders, the AA framework will expand the potential pool of customers along with providing additional insights into consumers' bill payments, investments and other data points to assess their creditworthiness.

What is an account aggregator? An AA is an RBI regulated entity that helps individuals to share information digitally from one regulated financial institution to another in a secure manner and only with the consent of the individuals. Moreover, individuals have control over features like the type of data shared, the period over which such data is accessible, revoking access, etc.

What is the architecture of the AA framework? Consumers, financial information providers (FIPs), financial information users (FIUs), and AAs are the four main stakeholders within the framework. They provide the digital infrastructure to enable data flows and manage consent for financial data sharing. AAs merely source the data from an FIP and share it with FIUs based on an individual's directions and consent; they cannot see the data. The end-to-end encryption works like a digital signature and makes the process much more secure and efficient than paper documents.

Exhibit 130: Account aggregators – How data flows between various constituents



Source: BIS, Morgan Stanley Research

What data could be shared? Currently, the AA framework is live with banking transaction data such as bank statements, bill payments, etc. However, gradually the framework will be leveraged to share all kinds of financial data including tax data, pensions data, securities data (MFs & brokerages) and insurance data. Eventually, it can also expand beyond the financial sector to allow healthcare and telecom data to be accessible to individuals via AA.

How does the AA framework work? The AA framework will be similar to that of UPI, once a user chooses which aggregator to get registered on, he can use the same registration across platforms. After getting registered the user will also be able to discover where all his data resides with the FIPs. The user can then link his data between the AA and the FIP, which then can be used to share his data with the FIUs on the other end. Through this entire process the data will remain at source and is only shared in the context of a particular transaction for a particular purpose.

AAs' role in OCEN: In the OCEN framework the AAs come in play when the borrowers agree to share their data to the lenders, i.e. the FIUs. This data is passed on through the AAs platform after receiving an approval from the borrower to share the data.

Entities/apps with AA operational licenses. Per Sahamati, currently there are six players with an operating AA license and another 9 players (includes PhonePe and NSDL e-Governance) have been given an in-principle license. Within the licensed players, CAMS, FinVu, NADL, Anumati and Onemoney have already rolled out client-facing apps.

Institutions onboarded on AA platform. Per Sahamati (as of Oct 15, 2022), there are 23 banks are live with AA, 2 are in development phase and 17 are evaluating. Sahamati is focused to get more banks on-boarded, which could take some time. Three Insurance companies (HDFC Life, ICICI Pru Life and TATA AIA Life) are live as of now while others have started evaluating or are in the development stage. NBFCs, securities companies and Investment advisors have started adopting the platform with many of them either live or in development/testing. Per media articles, SEBI has joined and GSTN is in the process of getting onboarded to the AA framework. Potential FIPs include insurance companies, exchange data, etc. Moreover, e-commerce players, or any other such entities whose customer data can be leveraged for financial services decisions, can also be seen as potential participants in the AA framework.

Confidential clean rooms will later be combined in the AA framework: Confidential clean rooms are virtual data rooms which store the private sensitive data of the borrower/user in a coded format. These clean rooms will preserve the data of the borrower to ensure that the sensitive data is not made public, and data sharing is limited to what is required. As a backdrop, in the current AA framework the entire data will be shared from the FIPs to the FIUs, i.e. it does not provide for a string or subset to be created of the data. Once operational the same will be used across platforms like flow-based lender credit, wealth management, robo advisors, personal finance management.

How has customer adoption been so far? Customer adoption of AA has been trending well. The number of accounts has gone up from 72k as of end-Dec 2021 to 1.89mn now. So far the ecosystem has fulfilled 1.90mn consent requests, per Sahamati.

Key banks that are live on AA include Axis Bank, Federal Bank, HDFC Bank, ICICI Bank, IDFC First Bank, IndusInd Bank, Karur Vysya Bank, AU SFB, Kotak Bank, Yes Bank and all 12 SOE banks. Bandhan and RBL are amongst the banks that are under evaluation. Some key players in the testing phase are Max Life and Bajaj Life, per Sahamati (as of Oct 15, 2022).

Use cases – Some use cases include lending, wealth management, personal finance management app, robo advisory and reconciliation of accounts.

Indeed, the account aggregator platform could be a credit bureau-style 'revolution' for underwriting by fintechs. As the data gets democratized and widely available post consent, users can get access to the financial information of potential customers on a real-time basis through standardized formats.

For the consumer, AA eliminates hassles like sharing physical signed & scanned copies of bank statements, certifying/validating the authenticity of documents, filling out forms, etc. With access to larger fields of data, credit assessment is improved which can lower interest rates for consumers.

For lenders, the AA framework reduces loan processing costs combined with enabling the capability to give instant approvals leading to increased financialization/growth opportunities. Insurance providers will now have more data to assess risks while underwriting businesses. Investment advisory firms can now source info seamlessly in a standardized format into their smart apps which enables them to deliver better, faster and personalized services. Across financial service providers, there will be a surge in business activity with lower entry barriers and a wider market reach.

OCEN: An introduction

Open Credit Enablement Network is a network protocol and includes a standard set of APIs which will enable end-to-end digital lending. Similar, to ONDC, OCEN's open protocol will be based on how Simple Mail Transfer Protocol (SMTP) works for exchange of e-mails between two different domains. The open protocol established by OCEN will do the same thing for digital lending. The loan service providers (LSPs) will have to embed the OCEN protocol on their platform and onboard the lenders. Post which, potential borrowers can register and avail credit from any of the multiple lenders on the LSP platform.

Stakeholders involved in OCEN: OCEN will include four primary stakeholders:

- **Loan service providers (LSPs):** An LSP is any customer-facing digital platform that can source borrowers. The platform could be a web app or an Android app that already has a core offering and a customer base. The LSP will have to embed the OCEN protocol on its platform, onboard the lenders and will help create customized lending products for potential borrowers.
- **Technology service provider (TSPs):** TSPs are fintech companies that work on onboarding the OCEN protocol on the platforms.
- **Financial institutions (lenders):** Financial institutions/ lenders after being onboarded as a lending partner on the LSP platform can provide credit to potential borrowers on the platform.
- **MSME and small businesses (borrowers):** MSMEs or individual consumers are the borrowers who can avail various credit options available within the LSP's platform through a secure digital process.

How does the OCEN framework work?

- **The OCEN protocol network will be embedded:** The OCEN open network contains an API for each step of the lending lifecycle. These APIs will be embedded in the LSP platform and will help connect the LSP platform with the platform of the lenders who are onboard. These lenders can then provide credit on the platform.
- **Communication between lender and LSPs platforms:** The OCEN framework, once implemented, will enable seamless interoperability between the lenders and LSPs. In simple words, many lenders can be enrolled on the LSP platform and can provide various credit products created by the LSPs to the borrower.
- The Sahay GST and Sahay Gem are the base use cases of OCEN, similar to BHIM application during the initial UPI rollout.

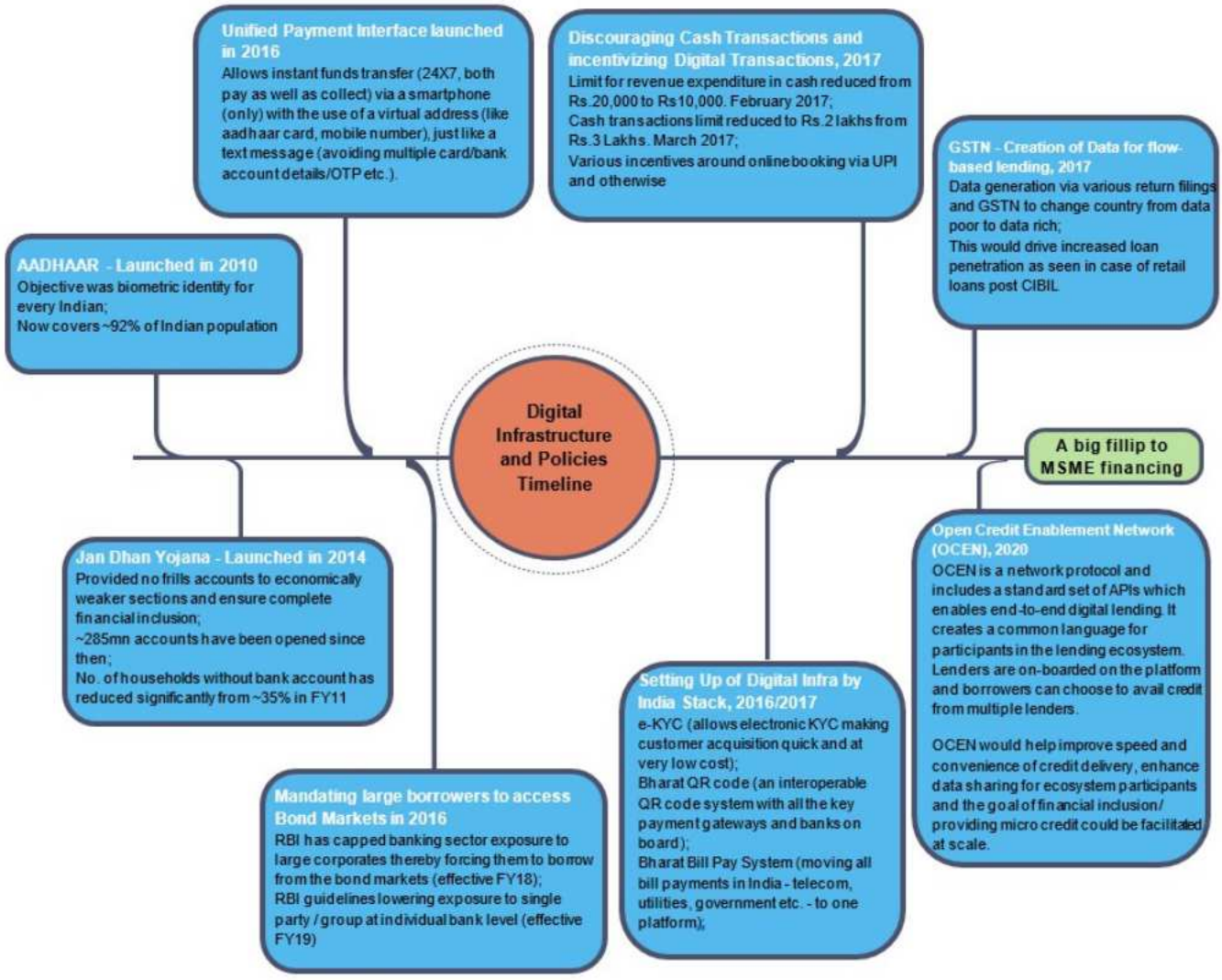
How are the layers of OCEN interconnected to IndiaStack?

- **Inner layer:** The inner layer is the user interface app, in which the OCEN protocol is embedded. This layer will showcase the credit options available to a borrower.
- **Middle layer:** The middle layer is where market innovators build innovative services. Here the apps are built to be interoperable and communicate with one another to complete the process.
- **Outer layer:** The outer layer is the public digital infrastructure, which is the basic backbone of IndiaStack. This is the layer from which all the data would be collected or authenticated.

Overall, the above stacks can help meet the requirements of an MSME seeking a lower credit value required over a short duration. The current system of lending is primarily based on an assessment of the balance sheet and includes a long process from applying for a loan to due diligence and approval. Therefore, MSME and small businesses cannot get access to credit easily which in turn leads them to approach money lenders or loan sharks who charge much higher interest rates. The OCEN open platform aims to bridge this gap by shifting the process of lending to a cash-flow-based approach vs the traditional balance-sheet approach, along with following the required due diligence, underwriting and credit checks.

Similar to their previous population scale initiatives like DBT, UPI and Fastag, this will improve the speed and convenience of credit delivery. This will also provide a platform to enhance data sharing between various participants in the ecosystem. Overall, the goal of financial inclusion and providing micro credit could be facilitated at scale. Indeed, if executed well, we believe these initiatives can widen the availability of credit significantly, similar to what UPI did to digital payment penetration in the country.

Exhibit 131: Timeline of steps taken in setting up digital infrastructure and policies that will help drive MSME loan growth



Source: Morgan Stanley Research

Exhibit 132: Traditional vs OCEN framework of lending

	Lenders old way of business		Lenders new way of business
Risk Assessment	Mainly Balance Sheet based assessment	→	Adapting Cash flow based assessment
Process	Manual intervention	→	100% digital
Product	Vanilla loan products of similar type	→	Variety of products - expanded range of loan ticket sizes and tenures
Engagement	Over long periodic gaps (lend and forget)	→	Continuous (lend and monitor)

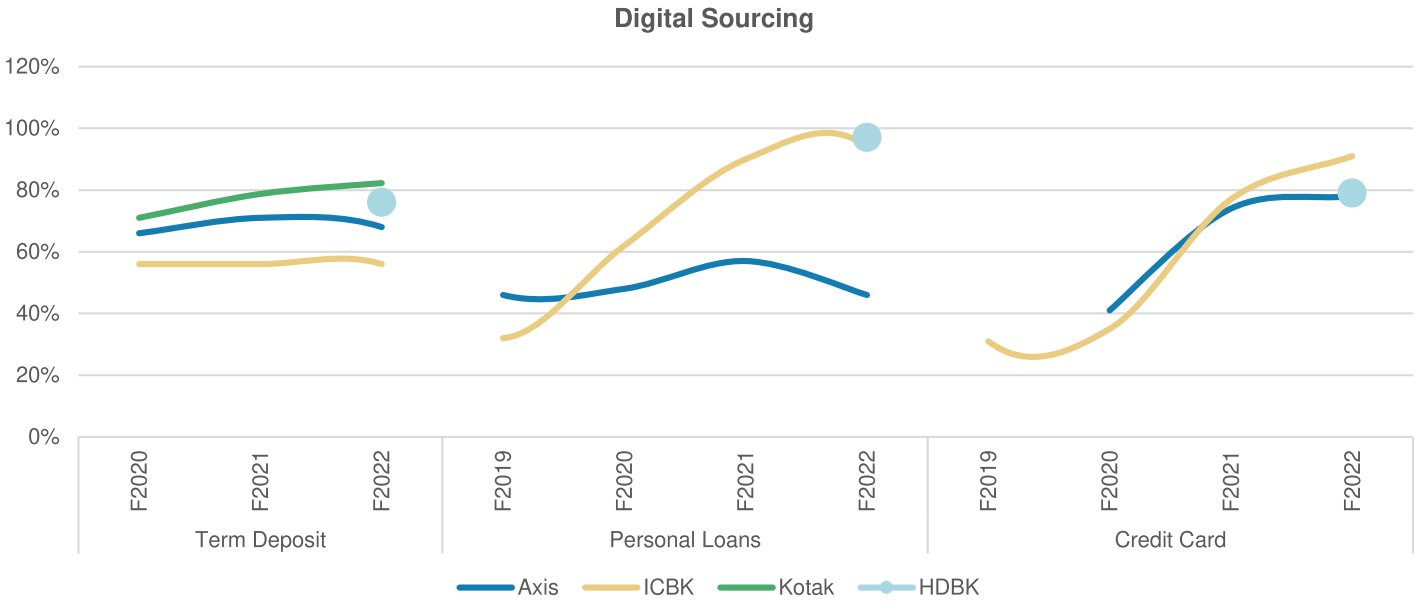
Source: Isprit, Morgan Stanley Research

Recent years have seen a significant increase in digital lending by traditional lenders – we expect this to get a significant uplift…

Most banks and NBFCs have built front-end capabilities to deliver loans digitally. Indeed, the share of loans originated digitally has gone up across banks. This has definitely reduced costs and improved productivity in recent years.

That said, this has not percolated to a wider set of products and/or customers, in our view. While some products still need significant physical meetings (for signatures, hypothecation, etc), the other challenge has been the ability to cross-sell and streamline underwriting processes for a particular customer across products. Even with respect to new customer acquisition, either the alternative data underwriting engine has not been built/tested and/or the data is not easily available. We believe the advent of AA and OCEN will solve for a number of challenges as discussed earlier and take digital lending to the next level.

Exhibit 133: India banks: Digital lending has picked up across lenders

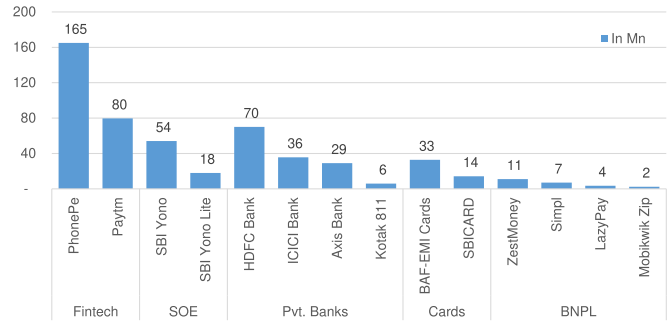


Source: Company data, Morgan Stanley Research, Note: ICBK – Digital sourcing includes Insta + Digitally sourced. Axis – Personal Loan disbursed is through phygital and digital mode. Kotak – Digital sourcing is avg. of quarters.

This has been concomitant with the rise of various fintech players which has raised investor questions around disruption risks for traditional lenders

Large fintechs have succeeded in building strong customer engagement (much higher than incumbent banks). One of the big misses by Indian banks has been leveraging UPI payments to acquire customers and build customer engagement via their respective banking apps, in our view. We note that monthly active customers are significantly higher on UPI payment apps (PhonePE, Google Pay, Paytm) than even the best private banks in the country. For these apps, monetization has to be via distribution of financial services, as payment take rates are dismal. To that effect, most of these payment apps are now getting very aggressive on lending in partnership with fintechs. They have been investing to built underwriting capabilities to leverage new data sets accessible to them given significant payment and other transaction trails on their app. We note that some of these payments apps (like Paytm) has seen significant rise in loan disbursements. Indeed, in just one year, they have overtaken leading aggregators like Paisabazaar, for instance. On our estimates, both Paytm and Paisabazaar will grow disbursements 5x over the next five years.

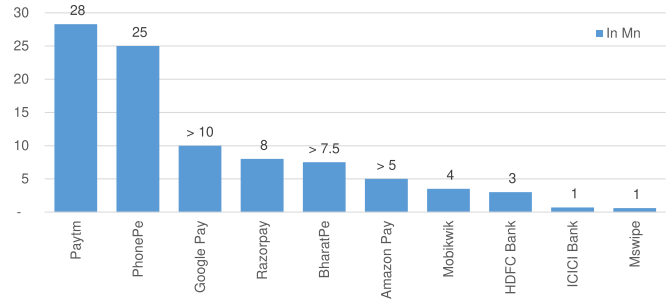
Exhibit 134: India financials – Customer base comparison with banks and fintech peers (monthly active where available, latest available data)



Mobile users (in Mn)	~1180
Smart Phone Users (in Mn)	~750
Active Internet Users (in Mn)	~740
No. of Debit Cards (in Mn)	935
No. of Credit Cards (in Mn)	78

Source: Media articles, TRAI, company data, Morgan Stanley Research; Note: we have used monthly active customers for PhonePe/Paytm; debit cards for ICICI Bank and Axis Bank as proxy for user base. For Zestmoney, Simpl, LazyPay and MobiKwik Zip, we have used BNPL users as their customer base.

Exhibit 135: India financials – Merchant base comparison with banks and fintech peers



No. of POS Terminals (in Mn)	~7
No. of QR Merchants (in Mn)	~50

Source: Media articles, RBI, company data, Morgan Stanley Research. Note: We have used merchant acceptance points for HDFC bank and ICICI Bank.

Exhibit 136: Fintechs add alternative data to banks' underwriting processes – some of these datasets are not readily available to banks. Fintechs have an advantage given higher usage of their apps relative to banks

Source: Morgan Stanley Research

Exhibit 137: Fintechs can provide Payment Collections-as-a-Service for lenders – An example of Paytm

Source: Company data, Morgan Stanley Research

However, evolving regulations and unique India dynamics mean it is unlikely to be a straightforward ride for fintechs

Unlike other countries, India has some differentiated characteristics which add some more challenges for fintechs to have a relatively straightforward win, in our view. **First, as discussed earlier, India's tech architecture is unique and publicly available to all.** This has, for instance, prevented India fintechs from creating closed-loop advantages around customer acquisition or transaction-level data.

Second, the starting point for banks is relatively more advantageous than in other countries. There is no doubt that Indian banks, similar to global banks, have significant room to catch up on technology investments as well UI/UX relative to fintechs. That said, Indian private banks and select SOE banks have very strong retail/MSME franchises and have invested to digitally deliver various financial services. Not to forget, banks have superior funding franchises (tough for fintechs to build given a lack of digital banking licenses in India), arguably more underwriting expertise and widespread distribution/collection networks (which is also getting a lot more digital).

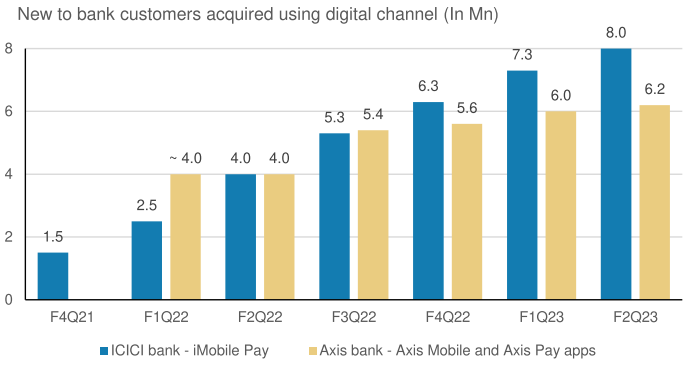
Third, regulations in India have proposed lending to be done via regulated entities. Indeed, the RBI has been moving towards a 'regulated entity' framework for fintechs. The RBI has finalized a number of measures to this effect, including a) separate legislation to prevent illegal digital lending; b) disbursement/servicing of loans only through bank accounts of the digital lenders – the RBI expressed concern about credit enhancement features (such as a first loan default guarantee (FLDG)) provided by some loan service providers, as they are taking on credit risk without maintaining the required capital; c) data collection should be via prior borrower consent and should be stored on servers located in India. Fintechs will therefore likely opt for a non-bank license to lend in India. As highlighted earlier, India doesn't provide any digital bank licenses as of now. Indeed, fintechs operating like neo-banks have to tie up with incumbent banks to offer products and solutions.

RBI wants to significantly increase supervision for big tech when it comes to financial services – these are key candidates for serious competition with banks. The RBI has mentioned in various speeches that it needs to widen the regulatory framework in light of the evolving environment and sheer diversity of the functions performed by fintechs. Moreover, it stated that activity-based regulations might be less effective than entity-based regulations when dealing with the financial activities of big tech firms. Indeed, the RBI working committee on digital lending mentioned that it is closely monitoring the entry of big tech in financial services via direct digital lending, etc, as this could alter the institutional role played by existing financial service providers and regulated entities. Consequently, there may be regulatory challenges in ensuring monetary and financial stability given increased concentration risk and in protecting customers' interests, the committee believes.

Hence, a key evolution we see is partnerships of lenders with fintechs, which should drive higher loan growth in retail segments (consumer + MSME)

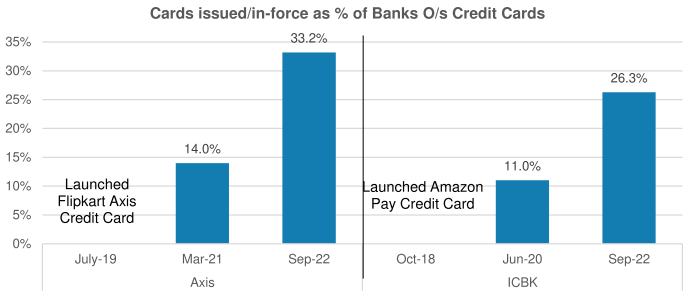
Both banks and fintechs have advantages to start with. Banks have superior funding franchises, arguably more underwriting expertise and widespread distribution/collection networks (which is also getting a lot more digital). Fintechs have better technology capabilities, user interfaces and innovative solutions. In our view, both banks and fintechs have realized the advantage of each other and have come together to offer comprehensive solutions. We note that there are some fintechs who are doing a lot of these activities on their own, but banks have enough fintechs to tie-up with them and offer similar products. Given the above backdrop, we see a more collaborative approach between banks and fintechs in India. The collaboration will facilitate a) large volumes in small ticket, short tenor, high frequency retail loans at a viable operating cost and b) cash flow-based lending instead of asset-backed lending.

Exhibit 138: Customers acquired using digital channel have been increasing



Source: Company data, Morgan Stanley Research

Exhibit 139: Customer acquisition trends through the issuance of co-branded cards has also seen a sharp increase



Source: Company data, Morgan Stanley Research

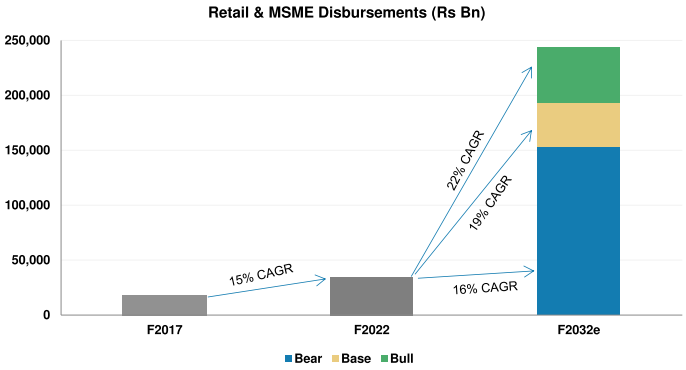
During the Global FinTech Festival, 2020, Mr Nandan Nilekani said: "Just like UPI created a common language between debit and credit and so on, and allowed us to create this huge ecosystem, OCEN protocol also enables that. This is something that is going to have a big impact. For the first time, we can truly democratize credit, and make sure credit reaches all the small companies and street vendors and so on."

This should give a fillip to credit to GDP… with rising share of retail loans, i.e. better risk diversification

In our estimates so far, we have assumed retail/MSME lending grows at a 16-17% CAGR over the next decade. This compares to a 14% CAGR over the past five years, partly also impacted by various crises including Covid. We have assumed some benefit of digitization and increasing partnerships with fintechs. However, we believe there is significant upside risk as AA and OCEN platforms get executed well. We have raised our retail/MSME loan growth forecast from a 16-17% CAGR to a 19% CAGR over the next decade to partly factor this. The uplift will be back-ended as it will take a couple of years for full execution.

Over the next decade OCEN will make it easier for MSMEs and small businesses to apply for credit, which is a major problem in India today. The TAM for retail/MSME lending is huge, and we expect retail/MSME loan disbursements to achieve a 19% CAGR to Rs193trn (US$2.3trn) by F32.

Exhibit 140: New consumer loan originations to grow 5x by F32, to 30% of GDP



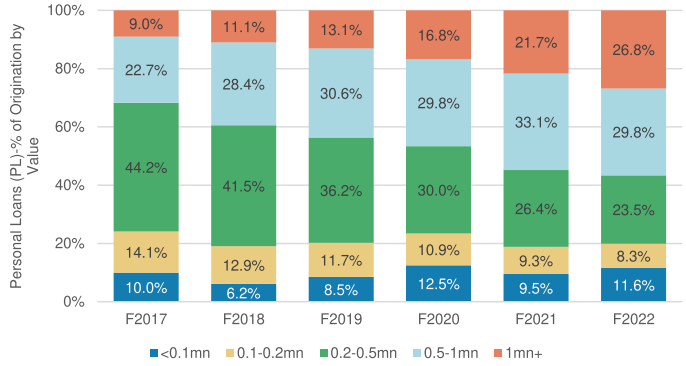
Source: RBI, NHB, company data, Morgan Stanley Research estimates

Exhibit 141: Lending TAM can grow strongly over the medium term

Loans	F2017	F2022		F2032e					
				Bear		Base		Bull	
	Rs Bn	Rs Bn	5Y CAGR	Rs Bn	10Y CAGR	Rs Bn	10Y CAGR	Rs Bn	10Y CAGR
Secured Retail	16,391	30,214	13%	124,129	15%	146,670	17%	174,959	19%
Unsecured Retail	2,988	10,110	28%	56,266	19%	78,995	23%	110,326	27%
SME (incl. Business Banking)	14,561	25,731	12%	112,022	16%	142,188	19%	179,474	21%
Retail & MSME	**33,940**	**66,055**	**14%**	**292,417**	**16%**	**367,853**	**19%**	**464,760**	**22%**

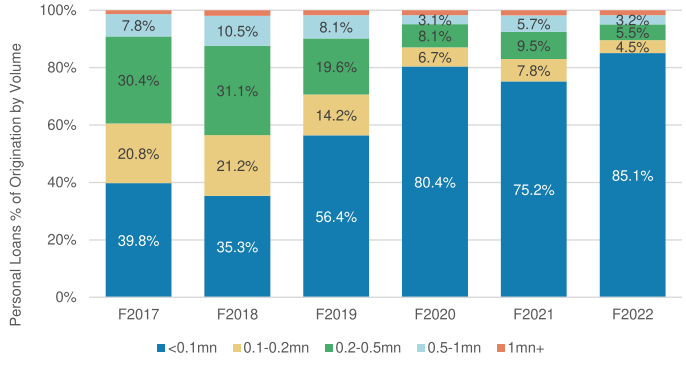
Source: Morgan Stanley Research estimates

Exhibit 142: Personal loan disbursements by value: share of small ticket personal loan originations (by value <0.1mn) has increased sharply in recent years led by NBFCs (also reflects higher partnership with fintechs)



Source: CRIF, Morgan Stanley Research

Exhibit 143: Personal loan disbursements by volume: share of small ticket personal loan originations (by value <0.1mn) has increased sharply in recent years, led by NBFCs (also reflects higher partnership with fintechs)



Source: CRIF, Morgan Stanley Research

Exhibit 144: Retail & MSME lending – Potential scenarios

	Scenario Definition
Base Case	Retail & MSME disbursement grow at ~19% CAGR over the next decade. This is helped by strong collaboration between banks and fintechs. The underwriting advantages helps strong growth in new to credit lending and thereby widens the scope of credit materially over next five years. Collaboration between banks/NBFCs and fintechs work well.
Bull Case	Retail & MSME disbursement grow at ~22% CAGR over the next decade. Apart from strong collaboration between banks and fintechs, we see significant increase in lending by fintechs in their own balance sheets - this also implies favorable regulatory guidelines as well.
Bear Case	Retail & MSME disbursement grow at ~16% CAGR over the next decade. This is broadly inline with our previous base case forecasts. The advantages of lending via AA/OCEN is largely to existing customers where the speed of delivery improves. The key challenge here would be that underwriting advantages from new datasets is not available to all, and only few players are able to capitalize of that.

Source: Morgan Stanley Research estimates

This will also have implications for profitability

Assuming AA/OCEN takes off as expected, we forecast it to add about 100bps to Indian banks' ROE by 2027. The key drivers of higher return ratios are as follows.

– We have further raised our retail/MSME lending estimates by 2-3pts.

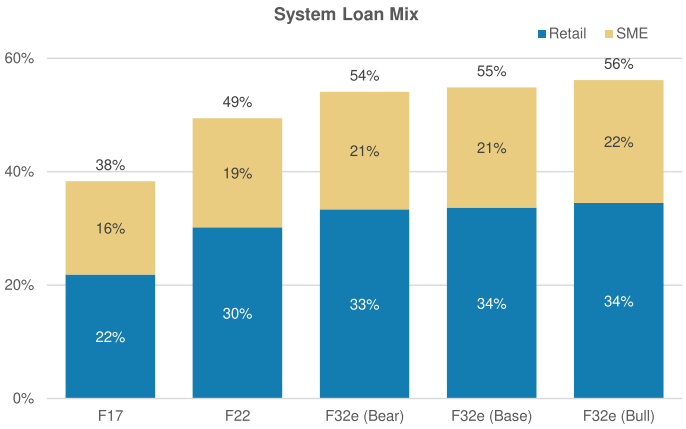
– The improving share of retail/MSME mix will likely aid margin improvement for the stronger banks. We note that the starting point of credit spreads for banks in India is not very high given greater competition. There will likely be some moderation in view of intensifying competition, but we expect this to be offset by an improving loan mix.

– We build some pressure on fee income mainly led by lower loan processing fees – we expect increased pressure given increased competition. Moreover, we expect the share of third-party loan originations to increase in the retail/MSME segment, implying some increase in operating costs.

– Cost ratios have room to improve further – we note that cost ratios for India are much higher relative to the region, and a faster pace of digitization can further improve productivity.

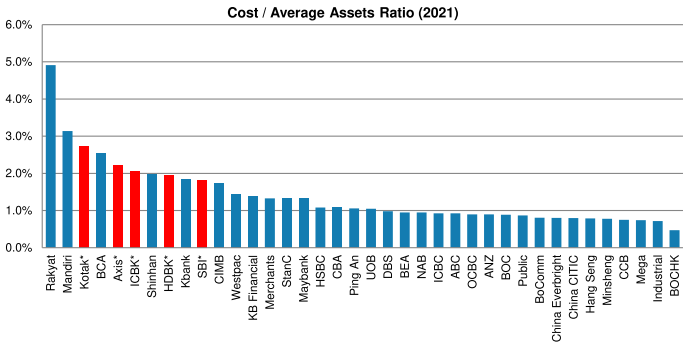
– We also expect credit costs to improve if digitization is well implemented. This is particularly important in the case of SOE banks, where usage of data/analytics can improve significantly.

Exhibit 145: India banks' loan mix: Share of retail and MSME to improve at a faster pace led by digitization



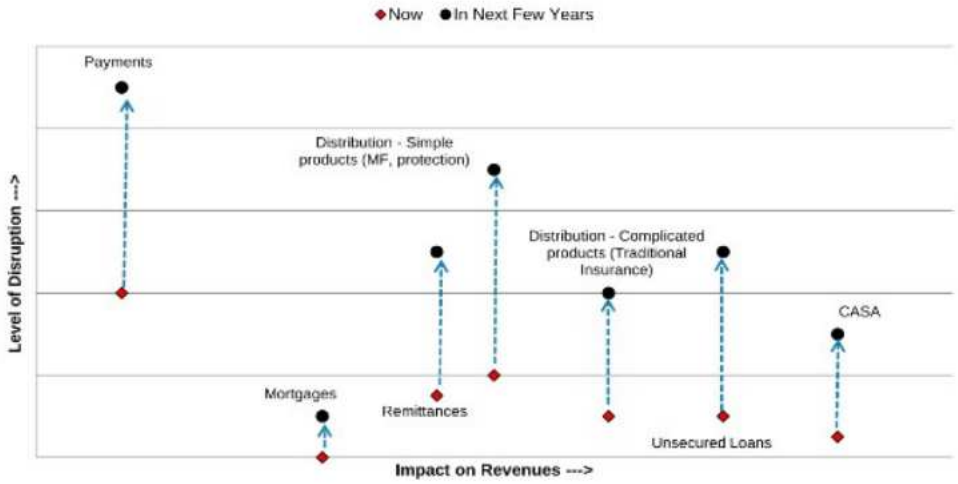
Source: Reserve Bank of India (RBI), company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

Exhibit 146: India banks: Material improvement in cost-to-asset ratio likely over the next five years



Source: Company data, Morgan Stanley Research estimates. *Costs/Avg. Assets as of F2022.

Exhibit 147: Areas of disruption versus revenue impact as technology usage gets more widespread



Source: Morgan Stanley Research

Leaders and laggards – While data will be available to all, analytical models, distribution capabilities and customer experience will determine the winners

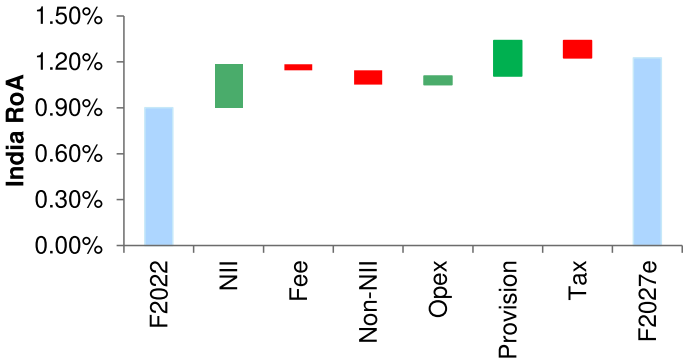
Once data is democratized, differentiation would be more focused on processing layers for consuming data, design & capability of rule engines to analyze data, building products and how quickly can it turnaround. Moreover, the underwriting experience of banks should also play a key role in understanding the risk-reward of various use cases. We expect the large private banks to be the big winners from digitization in India. They have implemented digitization at a fast pace and are also well-placed on funding. Indeed, the cost of disintermediation at these banks is much better than most other Indian banks – this will be one of the key reasons why fintechs would want to tie-up with them. In the non-bank financials space, we see some of the pure-play consumer financiers with high ROE and large customer franchises as the big winners. Laggards would likely be select mid-sized/regional/state-owned banks and certain housing finance companies playing in the commoditized home loan cohorts, that have high overlap with banks. While some of these players are tying aggressively with fintechs, we would closely watch how cross-selling and other revenue streams are shared between them.

Exhibit 148: Assuming AA/OCEN takes off, we forecast it to add about 100bps to Indian banks' ROE by 2027. This will be helped by an uptick in margins and cost efficiencies, partly offset by fee pressure

% of average assets	F2017	F2022	F2027e	F2027e Post OCEN
Net Interest Income	**2.5%**	**2.8%**	**3.0%**	**3.1%**
Non-Interest Income	**1.4%**	**1.1%**	**1.0%**	**0.9%**
Fee income	0.6%	0.5%	0.5%	0.5%
Others	0.8%	0.5%	0.4%	0.4%
Total Revenues	**3.9%**	**3.8%**	**4.0%**	**4.0%**
Total costs	-1.8%	-1.8%	-1.9%	-1.8%
Pre-provision Operating Profits	**2.1%**	**2.0%**	**2.1%**	**2.2%**
Bad Debts	-1.5%	-0.5%	-0.5%	-0.5%
Other provisions	-0.1%	-0.2%	0.0%	0.0%
PBT	**0.5%**	**1.2%**	**1.5%**	**1.6%**
Tax	-0.2%	-0.3%	-0.4%	-0.4%
ROA	**0.3%**	**0.9%**	**1.1%**	**1.2%**
Leverage (x)	13x	12x	13x	13x
ROE	**4.2%**	**10.8%**	**14.2%**	**15.6%**

Source: RBI, company data, Morgan Stanley Research estimates

Exhibit 149: Indian banks' RoAA waterfall



Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

Risks to the above thesis

A lot will depend on whether a) banks are able to leverage the tech architecture, b) the new alternative data-sets drive better underwriting and widen the target lending customer base, c) the lending system remains foolproof and risks around fraud are well managed, d) the regulatory environment for digital lending with or without fintechs remains favorable, e) lenders build proper grievance redressal systems, particularly for loans that are getting originated on partner platforms.

Energy Transition: Net Zero = Net Gain

India's per-capita energy consumption has doubled in the last 20 years and is now at 32EJ. All of India's villages now have electricity, clean cooking gas is available to all, and the passenger vehicle population grew 7x over that period.

India's energy transition already underway: India's energy transition started in 2016 with a focus on doubling the gas and renewable mix in the energy basket by 2025. It was further accelerated when alternative green fuels like hydrogen and biogas/ethanol found policy support. India has already doubled the renewable mix in electricity to 11% in F22 while the gas mix has risen to 6% of the overall primary energy mix, so unlike the past the progress on these goals has been substantial with capital commitments by corporates rising every quarter. To conclude, India is moving a lot more quickly to pivot the way it consumes energy and with access to energy rising significantly. The timing could not have been more opportune.

India energy consumption set to increase: Energy consumption/capita is still lower than the global average and is 1/10th that of the US. We expect it to rise from 32EJ in 2021 to 57.6EJ in F32 (2031). We expect 1) utilities' share of renewable energy (including hydro) to rise from 22% in F22 to 41% in F32, while the share of coal-based power generation will fall to 50% (F22: 73%) and 2) for autos, 40% of two wheelers and 30% of PVs sold in F32 will be electric.

Relevance of India's is energy transition: 1) India's energy transition helps not only in lowering emissions but also to improve the current account balance, as it will help in lowering import dependence across oil (80%), gas (55%), coal (25%) and green transition components (95% solar modules). 2) We see a strong investment cycle for renewable energy (RE), delivery systems (pipelines, transmission & distribution) and consumer (autos, etc). 3) Energy transition investments will positively impact India's terms of trade and reduce headline inflation volatility as the imported energy share of GDP declines by nearly 150bps over 2022 to 2032. We estimate that imported energy as a % of GDP will decline from 4% in F21 to 2.5% in F32. 4) It also improves living conditions, as 14 of the 20 most polluted cities in the world are in India. Sectors like utilities, industrials and autos will lead on decarbonization.

India could leapfrog the world on energy transition: The commitment to halving Scope2 emissions by 2030 should accelerate green hydrogen adoption (Green Hydrogen Mission), provide capital grants for in-house development of battery/solar panel manufacturing, and construct an ecosystem around biofuels with mandated fuel blending. These should make India, which has largely been a follower in the energy transition (behind China on gas and Europe on renewables) to move in step with the world in technologies like green hydrogen and fuel cells.

Investment conclusion: We believe the energy transition is a significant theme for the upcoming decade with multiple opportunities emerging across the value chain for investors and corporates alike. We estimate total investments of US$726bn over the next decade as India accelerates its energy transition.

Exhibit 150: Energy transition: The US$726bn investment roadmap

Exajoules	2021	2031e	Cumulative till 2031 Investments (US$bn)	Key areas
Oil	8.5	10.9		
Gas	2.2	3.9	**126**	Pipelines,import terminals, City gas networks
Electricity				
Non Fossil generation	*5.0*	*19.1*	**292**	Renewable Capacity, Hydro & Nuclear capacity + Battery
Fossil generation	*15.3*	*20.4*	**-**	Coal based power plants
Transmission & Distribution			**125**	
Environment Capex			**12**	FGD on coal based power plants
Solar Manufacturing Equipment			**10**	
Hydrogen				
Fossil	*1.0*	*1.3*		
NonFossil	*-*	*0.6*	**70**	Solar panels, electrolysers, storage facilities, port handling + Fuel Cells
Electric Vehicles			**86**	Batteries, plants, components and charging infra
Ethanol	0.5	1.3	**5**	Blending facilities and Ethanol production
Total	**32.4**	**57.6**		
Total (GW)	**1,013.6**	**1,800.1**	**726**	

Source: Morgan Stanley Research estimates

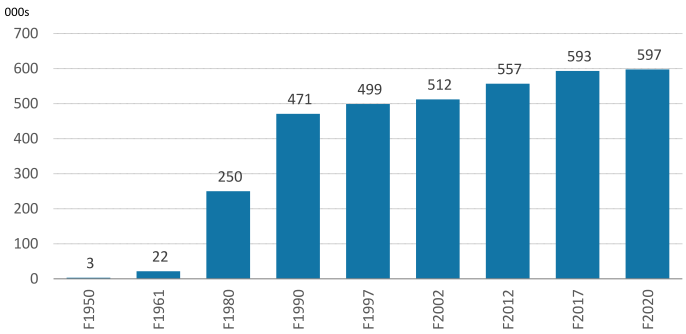
India's energy consumption and change in the coming decade

India's energy consumption is inflecting as last-mile access has seen a sea change with 100% electrification across villages achieved at the end of F21. Similarly, nearly all of the population has access to clean cooking gas and pipeline gas access is now available to 50% of the population. These shifts in last-mile access not only lift India's per-capita consumption, they also provide opportunities to make the energy transition pivot quicker, easier and more efficiently.

India's current energy consumption patterns are highly skewed to oil and coal. The two fuels account for nearly 80% of India's primary energy consumption as coal accounts for 73% of electricity generation and oil accounts for 80% of transport fuel demand. India's energy consumption of 32EJ is where China was in 1993-1994 and will rise to 57.6EJ by F32 (still 20 years behind China) with per-capita consumption still about one-fifth of the developed world.

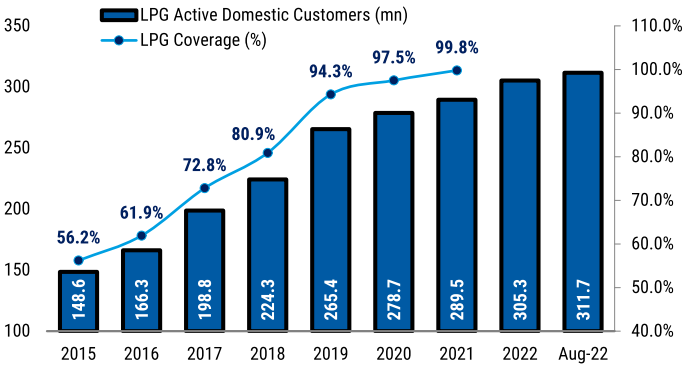
This pickup in energy demand is providing India an opportunity to tackle the energy transition in a time of new energy technologies – very unlike the developed world where demand growth is lackluster and hence the energy transition is slower. Over the past decade India has accelerated its energy transition, starting with gas and electrification and now alternative fuels like bio-fuels and hydrogen.

Exhibit 151: All villages in India are now electrified



Source: Ministry of Power, Morgan Stanley Research

Exhibit 152: India: Access to clean cooking fuel (LPG) has reached near full penetration



Source: PPAC, Morgan Stanley Research

Exhibit 153: How will India consume energy?

Exajoules	2021	2031e
Oil	8.5	10.9
Gas	2.2	3.9
Electricity		
Non Fossil generation	*5.0*	*19.1*
Fossil generation	*15.3*	*20.4*
Hydrogen		
Fossil	*1.0*	*1.3*
NonFossil	*-*	*0.6*
Ethanol	0.5	1.3
Total	**32.4**	**57.6**

Source: Morgan Stanley Research

Likely increase in energy consumption in the coming decade

India's energy demand has been growing at a 4% CAGR over the past decade, and we anticipate a 5% CAGR this decade. India's energy demand growth has multiple drivers that include disposable income growth, population growth, improving access in rural India, and a rising proportion of manufacturing in GDP.

India today is the fastest-growing oil market globally. This is about to materially change, however, as investments in gas pipelines, renewable infrastructure, solar capacity, electric two-wheelers, and biofuels are at inflection points that look more real as trends than anytime in the past two decades.

All of this will move green fuels to 37% of India's basket by F32, i.e. more than double the level in F22, despite overall energy consumption growing at a 6% CAGR over the same period. Electricity and gas will grow at 7-8% CAGRs while oil demand will slow to a 3% CAGR. The key contributors to demand growth will be transport fuel, electricity, and demand from heavy industry.

Despite the sharp rise in per-capita energy consumption, the average household in India still consumes only a tenth as much electricity as the average household in the US. Every year, India will add a city the size of London to its urban population, which involves higher energy use, infrastructure buildup and increased transportation.

Key numbers suggesting India is seeing an inflection in its energy transition journey:

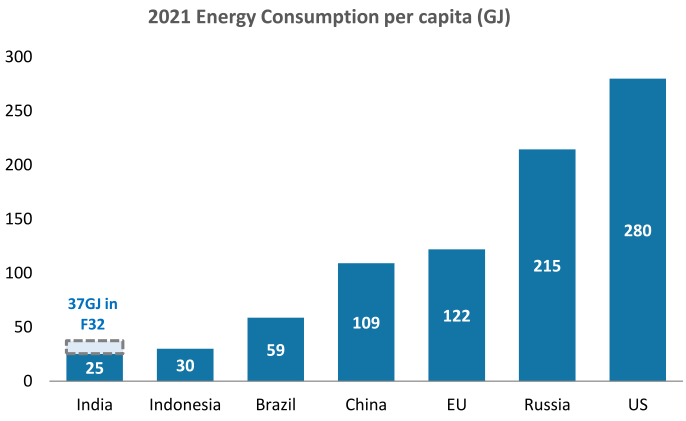
1. Renewable & allied infrastructure investments have been announced by large corporates such as Adani Group, Reliance, Tata group, JSW group, NTPC and fuel retailers. Global PE investors and strategic partners like Petronas, Jera, and Total are committing to India's energy transition
2. Two-wheeler EV penetration in key cities is now over 10% (after just one year of launch)
3. India's biofuels blending is now 10%+ and will double by 2025
4. Gas pipeline infrastructure has led to gas in overall mix now beyond 6% and rising to 15% by 2030
5. Policy framework is now in step with the rest of the world with India announcing a National Hydrogen Mission and working on PLI schemes providing incentives to locally manufacture solar modules, batteries and electrolyzers – which are all necessary ingredients of the energy transition.

Exhibit 154: India's RE sector: Aggressive RE capex aspirations of corporates in India

Company	F22	Target	By
India	**111 GW**	**500 GW**	**F30**
Top Corporates	**22.4 GW**	**228 GW**	**F30**
Adani Green	5.4 GW	45 GW	F30
Azure	2.6 GW	7.4 GW	F25
JSW Energy	0.3 GW	20 GW	F30
NTPC	1.8 GW	60 GW	F32
ReNew Energy	7.6 GW	18GW	F25
Tata Power	3.4 GW	25 GW	F30
SJVN	0.3 GW	25GW/50GW	F30/F40
BPCL		10 GW	F40
THDC		10 GW	F30
CIL		3 GW	F26
Torrent Power	1 GW	5 GW	NA

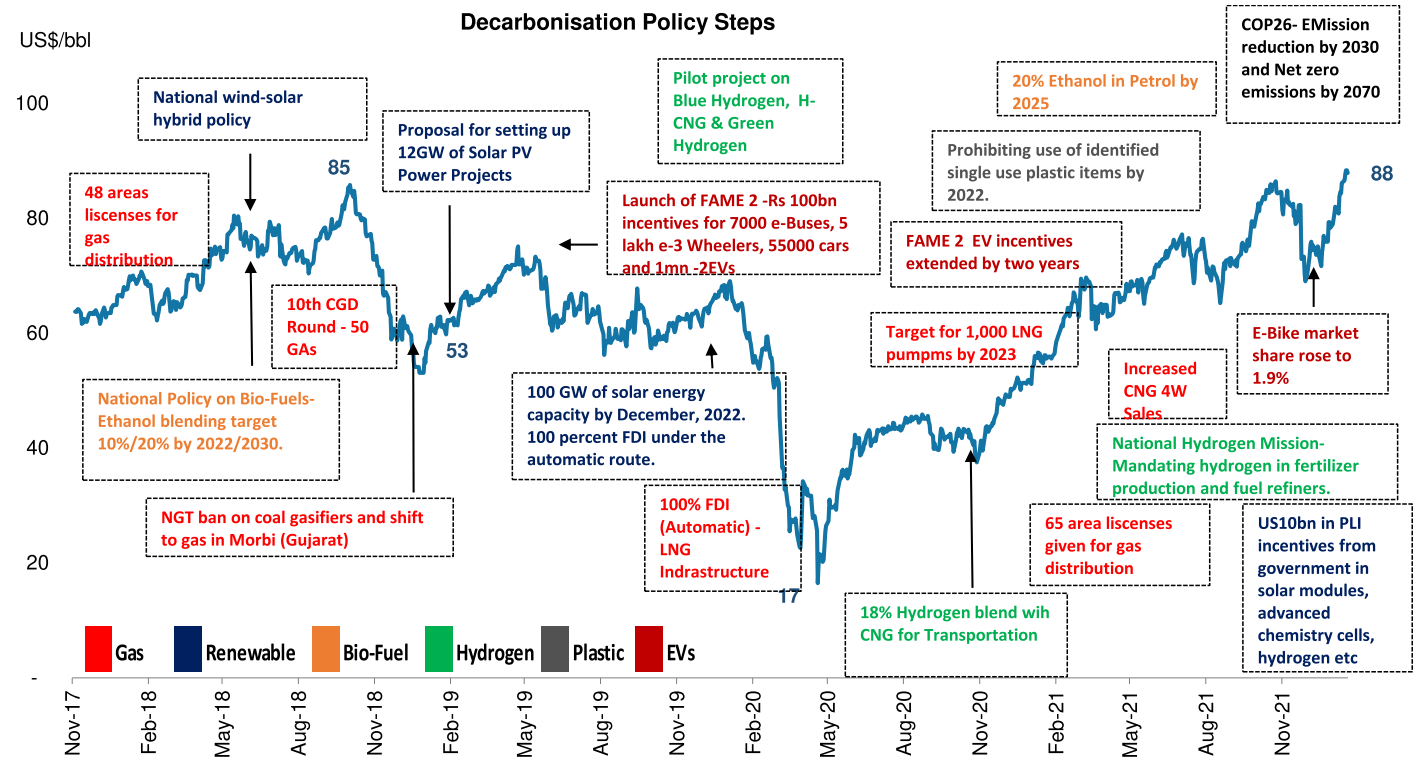
Source: Company data, Morgan Stanley Research

Exhibit 155: India's primary energy consumption to reach 37GJ by 2030



Source: BP Stats, Morgan Stanley Research

Exhibit 156: India's decarbonization journey – Evolving policy framework

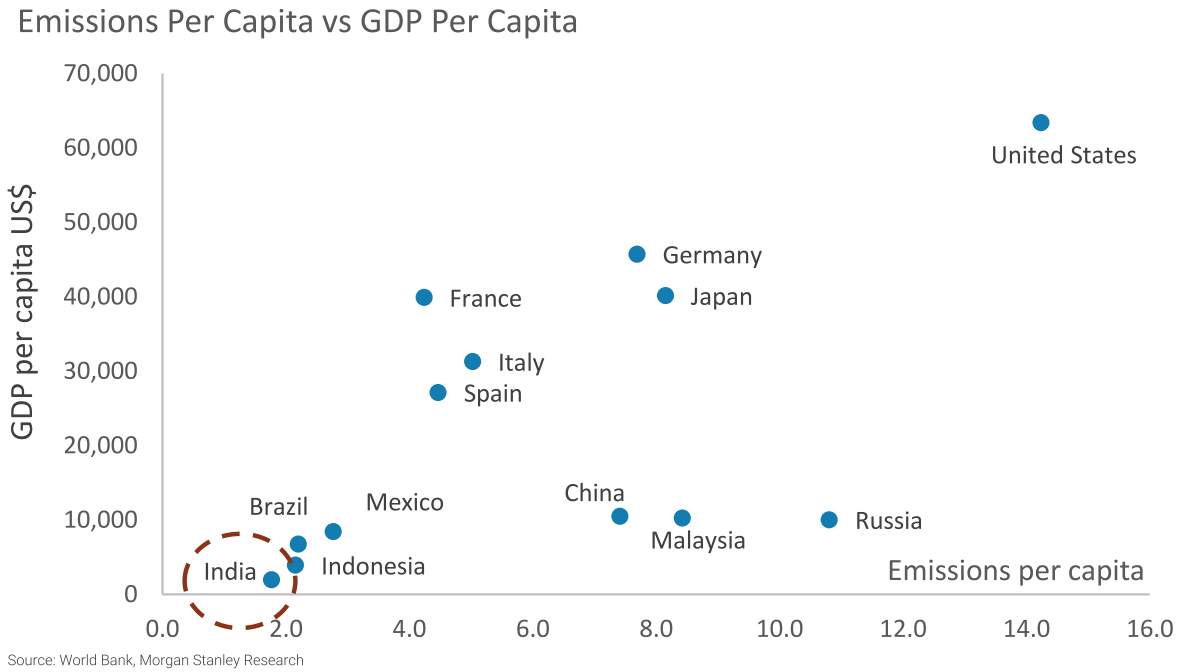


Source: News articles, company data, Morgan Stanley Research

India's COP26 commitments and boom in renewable energy

After China and the United States, India, which releases 2.44bn tonnes of carbon dioxide annually, is the third-largest emitter of this GHG, making it a key player in emissions reduction. On a per-capita basis India's emissions remain below the world average.

Exhibit 157: Globally we have seen that emissions per capita rise with an increase in GDP per capita



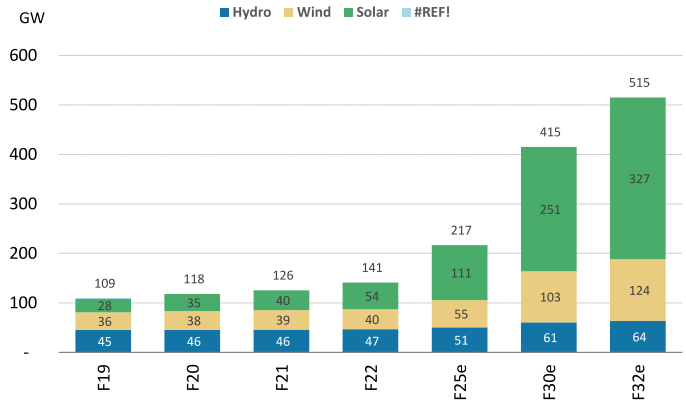
Source: World Bank, Morgan Stanley Research

At COP26 India shared its climate action plan and it includes:

- Reach 500GW non-fossil energy capacity by 2030.
- 50% of its energy requirements from renewable energy by 2030.
- Reduction of total projected carbon emissions by 1bn tonnes from 2021 to 2030.
- Reduction of the carbon intensity of the economy by 45% by 2030, over 2005 levels.
- Achieving the target of net zero emissions by 2070.

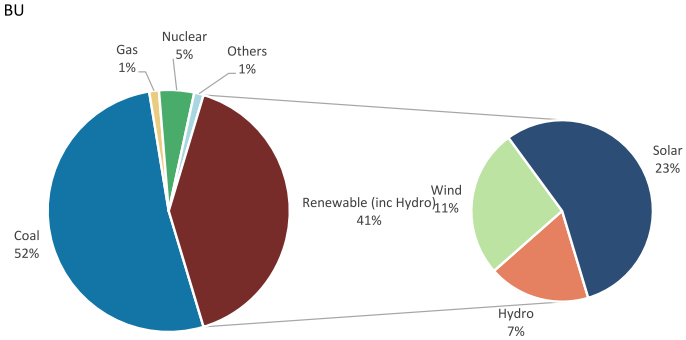
Renewable energy sector: India's power sector is dominated by coal (73%), which contributes around 46% of India's GHG emissions. We expect overall power demand to rise at a 7% CAGR over the next decade, which is quite strong compared with the demand outlook for the majority of large economies. The Indian government's commitment to COP26 targets five-fold growth in the RE sector over the next decade. RE is already the cheapest form of electricity (no subsidy dependence), and given India's climate change commitments we expect the regulatory environment to continue being favorable. We expect a large portion of incremental power demand to be met through RE (including hydro) and we expect its contribution in overall generation to rise to 41% in F32 (F22: 22%).

Exhibit 158: India: RE including solar capacity to see steep growth



Source: CEA, Morgan Stanley Research estimates

Exhibit 159: India: RE including hydro to form 41% of generation by F32



Source: CEA, Morgan Stanley Research estimates

Transportation contributes around 13% of India's GHG emissions and is the country's third-largest GHG-emitting sector. The transportation sector is set for high growth; we estimate that around 25% of incremental global car sales over 2021-2031 will be in India. Co-ordinated central and state policy support and favorable economics are moving the sectors towards low-emission mobility (EVs, CNG, hydrogen and rail).

Sources of energy supply

The energy transition will lower dependence on oil and coal, but significant investments are needed across the solar value chain, wind, gas pipelines, electrolyzers, fuel cells, battery storage, EVs, transmission and distribution infrastructure.

The basic building blocks here include silicon, hydrogen, ethanol, lithium and methane. India is abundant in three – silicon, ethanol and hydrogen – but imports half of its gas requirements and all of its lithium.

By 2031, we see India leveraging the three domestically available raw materials to its advantage while simultaneously making strides to expand co-operation with the US, Middle East, Indonesia and Australia to source its gas demands.

Another important point is that, despite the energy transition, India's oil and coal needs will be 32% higher by F32. As global investments in these two minerals have been declining, India will need to address its energy security needs and will, we believe, need to partner with non-OPEC countries and the US to diversify its sourcing for oil. Korea and Japan could also see partnerships with Indian players on key components like batteries and electrolyzers as part of production-linked incentive schemes.

Coal dominance to reduce: We expect total domestic coal production to grow at a 6% CAGR over F22-2032, to 1.5bn MT, and overall coal imports to grow at a 5% CAGR (350mn MT). RE's (including hydro) share in power generation will increase to 41% in F32 (F22: 22%) and coal's dominance in power generation will come down to 50% in F32 (F22: 73%) but will continue to service base load demand in a material way.

Economics for India's energy transition

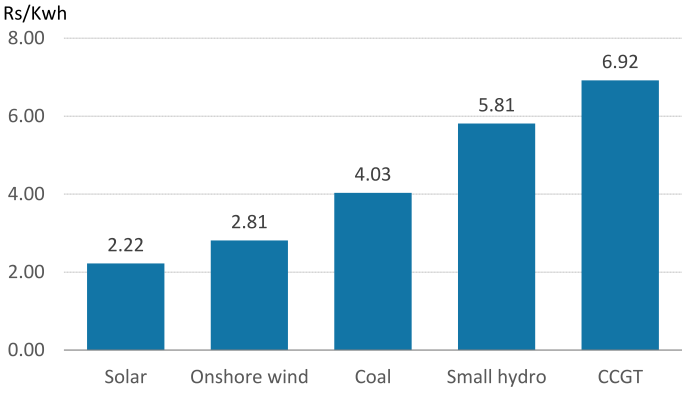
RE – Grid parity in India: RE achieved grid parity in India about five years back. Solar & wind – despite market volatility and various government levies – continue to be the cheapest forms of generating electricity, and we believe further technological improvements will help drive efficiency and reduce costs further.

EVs are competitive on total cost of ownership (TCO) EVs lead on cost of running but acquisition costs are higher than ICE vehicles and hence overall TCO is a touch below gasoline vehicles. Currently, state incentives are supporting EV TCO. Select OEMs will get further subsidies under the PLI scheme (over F23-2027) for selling EVs. In the medium term, scale gains, localization of batteries and technology breakthroughs driving lower EV costs will further support EV economics.

Green hydrogen: We estimate that the technology's evolution and electrolyzer affordability will cut hydrogen prices in about half, to parity with gas in India. Improving the efficiency of electrolyzers, as well as increasing load factors at solar plants, will drive the cost of green hydrogen below Rs160-Rs200/kg (US$2-2.5/kg) by 2030, versus Rs320-450/kg at present (Exhibit 162). At this price, green hydrogen will start to compete with hydrogen produced from imported natural gas, allowing it to make inroads into various end-use segments. India's lack of domestic natural gas supply and the high cost of imports will make green hydrogen competitive sooner than in other parts of the world. This also points to an even quicker ramp-up in domestic demand and global exports from India. Reliance Industries and Niti Aayog have even more ambitious plans to lower costs of green hydrogen to US$1/kg. Government policies on production linked incentive schemes and lowering the cost of renewable electricity for green hydrogen production are also supporting lowering green hydrogen costs.

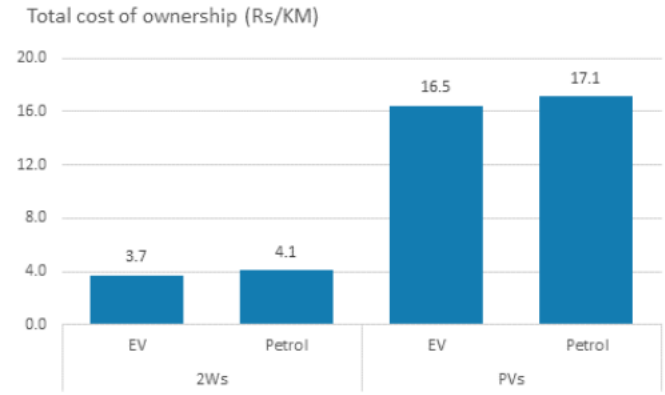
Gas: Gas and renewables will coexist and complement each other to address rising electricity demand as EV penetration rises. Also, higher access to last-mile gas supply will lower cooking gas subsidies in the country. Overall, we believe gas will be 15-20% cheaper than oil fuel and with lower Co2 emissions it would help lower carbon costs for end industrial consumers as well. While India would still import 55% of its requirements by F32, we believe rising supply in the Middle East, US and Russia will help keep import prices within check.

Exhibit 160: India's power generation: Solar & wind have become cheaper than conventional sources



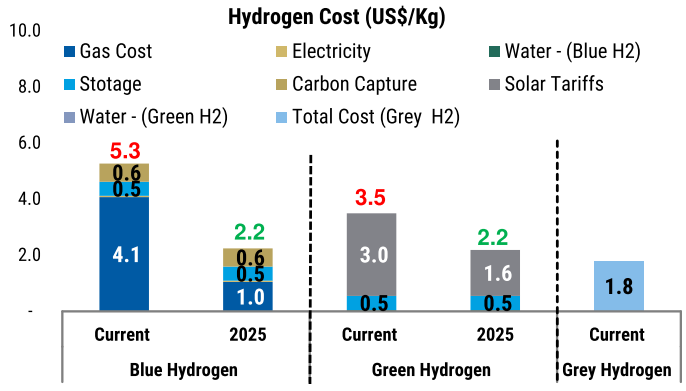
Source: Morgan Stanley Research

Exhibit 161: 2Ws and PVs – TCO comparison



Source: Company data, dealer checks. Ex Showroom Mumbai. For PVs, we use Tata Tiago while for 2Ws, we use Ola Electric S1 Pro vs Honda Activa 125CC. EV TCOs are post central and state incentives - Mumbai E2W incentives have ended but continues to provide incentives for EV PVs. E2Ws get FAME incentives. 2W based on average life of 10 years while PVs based on average life of 12 years.

Exhibit 162: India: Green vs blue vs grey hydrogen economics



Source: Morgan Stanley Research estimates

Energy transition: US$726bn investment opportunity

We estimate total investments of US$726bn over the next decade as India accelerates its energy transition. We envisage about US$250bn would be towards providing last-mile access (power transmission, distribution & gas infrastructure) and a lot of this would be front-loaded in the early part of the decade.

#1: Power transmission US$40bn+: India's transmission sector has witnessed increased participation of both large domestic and institutional investors, owing to the stability of the asset class and availability based business model. India's transmission asset base was 456,716 circuit kilometers (ckm) in Mar-22, and has grown at a 4% CAGR over F15-22. Going forward the Indian government has directed CTU (Central Transmission Utility) to assess transmission network addition requirements every six months. As of the Mar-22 assessment, transmission capex of US$16bn has been identified to be completed by F27. Further, transmission planning for capacity addition beyond F27, additional investments needed in state transmission and newer avenues like transmission for offshore wind opportunities would add to investment requirements.

#2: Power distribution US$85bn: With the objective of reducing losses and improving the strength of India's power distribution sector the government has earmarked investments worth US$40bn (Rs3trn, which includes budgetary support of Rs976bn) to be invested over F22-26 under the recently launched (Jul-21) Revamped Distribution Sector Scheme (RDSS) scheme. The scheme is looking to reduce the pan India AT&C losses to 12-15% and ACS-ARR (tariff) gap to zero by 2024-25. The said scheme subsumes four earlier running schemes in it. The scheme would also focus on installation of 250mn prepaid smart meters by F25, feeder separation, modernization of distribution system (SCADA for 100 urban areas) and rural and urban area system strengthening.

#3: Gas distribution network US$126bn: India is looking to double its gas pipeline network and add city gas distribution networks and by 2025 96% of India's population and 86% of India's area would have access to gas. We estimate a US$126bn investment in pipes, LNG terminals and associated gas infrastructure around dispensing is being developed across the country which will help raise gas's place in the fuel mix to 15% by F32.

#4: Renewable capacity US$292bn: We expect India to have an installed solar capacity base of 327GW by F32 (F22: 54GW) and wind to be 124GW (F22: 40GW), which we estimate would entail investments worth US$249bn. Another US$43bn is also estimated towards battery storage during the period. This would imply the proportion of RE in India's generation/capacity would rise from to 11%/28% to 33%/55% respectively. We have seen a few large Indian corporates commit over 225GW already.

#5: RE manufacturing capex US$10bn: The debate around self-sufficiency vs. efficiency has become intense as the world transitions away from a unipolar orientation which became more evident with US/China trade tensions and then deepened amid pandemic-related disruptions. As geopolitical tensions increase, supply-chain diversification focus is increasing. Indian is looking lower its import dependance on solar value chain and has announced few measure: a) basic custom duties on imports, b) modules procurement only from approved list and c) PLI scheme to develop local module manufacturing. We estimate investments worth $10bn to be made over the next decade to localize the RE manufacturing and related supply chain.

#6: Green hydrogen & ecosystem US$70bn: As the world retools the way it produces and uses energy, and as energy security takes center-stage, green hydrogen is gaining attention. India's hydrogen adoption plans are scaling up more quickly than we anticipated as corporates and policy-makers have put in place the building blocks for investment in a manner similar to natural gas in 2015 and electricity more recently. Hydrogen, which by weight carries 4x more energy than gas, offers a significant opportunity for India. Interestingly, hydrogen infrastructure can leverage existing gas and electric hardware, limiting the time needed for adoption as well. Under the National Hydrogen mission, India targets green hydrogen of 5mn MT, which would entail investments worth US$70bn over the next decade.

#7: Electric vehicles & low emission mobility US$86bn: We estimate that 25% of incremental global car sales over 2021-2031 will be in India. We project 30% of PVs and 40% of two wheelers to be electric by F32. To support electrification we estimate that India needs around 190 GWh of battery capacity, and 2.5mn charging points. Coordinated central and state policy support and favorable economics are moving the sectors towards low emission mobility (EVs, CNG, hydrogen and rail). We believe that the transition to EVs itself will drive US$86bn capex towards battery localization (US$18bn), EV manufacturing (US$37bn) and charging infrastructure (US$31bn).

Economic implications of India's energy transition

#1: Investment implications

The rise in India's energy consumption alongside the energy transition opens up a new segment to boost investment growth. From a macro context, we expect India's investment rate to see a secular increase, as private capex picks up. We expect the investment rate increase to be front-loaded, with capex to GDP rising to 36% by F27 and thereafter remaining rangebound at around 35-36% in the decade. As such we expect the total investment pie to rise from US$922bn in F22 to US$2,700bn by F32. We believe this rise in capex will help to unleash a virtuous cycle of investment > more jobs and income > more savings > more investment.

#2: Terms of trade impacting macro stability

We expect the imported component of energy consumption to steadily reduce, which will improve India's terms of trade and benefit macro stability indicators.

(a) Inflation: As India's energy consumption rises to 57.6EJ by F32, this implies that households will likely be spending more on energy-related components. For context, currently energy-related spending is about 3.5% of the private final consumption expenditure, compared to about 8.7% for US households. We expect India's per-capita income to increase from US$2000 in F22 to US$5000 by F32. However, even as the inflation basket will have a relatively higher weight for energy as spending patterns change, we envisage a lower impact from the volatility of imported energy prices.

(b) Current account balance: A lower imported component of the energy consumption will have positive ramifications for India's terms of trade and external balance sheet metrics. The energy transition will help to lower import dependence across oil (80%), gas (55%), coal (25%) and green transition components (95% solar modules). This implies that imported energy's share of GDP will likely decline by nearly 150bps over 2022 to 2030. We estimate that imported energy as a % of GDP will decline from 4% in F21 to 2.5% of GDP in F32. This implies savings (i.e. saving due to energy transition vs. in a business as usual scenario) on the imported energy payments of about US$300bn until F32, or about US$34bn annually. Further, just specifically on oil, the net oil import bill has averaged 3.5% of GDP in the last 10 years, while the CAD ex oil has been in surplus averaging 2% of GDP. We expect the net oil import burden to average around 1.8-2% of GDP in F23-F32. As such the current account could move close to being in balance or potentially a slight surplus by F32.

#3: Improved living conditions: As per the 2021 World Air Quality Report, 21 of the 30 cities with the worst levels of air pollution are in India. It is estimated that 20% to 30% of total urban PM2.5 concentrations are directly or indirectly due to internal combustion engines in motor vehicles.

In 2019, India's Ministry of Environment, Forest and Climate Change (MoEF&CC) enacted the **National Clean Air Program (NCAP)**. The plan seeks to reduce PM concentrations by 20% to 30% by 2024 in all identified non-attainment cities, increase air quality monitoring, and implement clean air action plan.

Risks

Weather-related risks: India's energy transition is exposed to risks from weather conditions. Variability in wind speeds, irradiation conditions, rainfall, and hydrological conditions can lead to deviations in generation patterns from cleaner sources, resulting in an inevitable dependence on conventional generation. Rising temperature can also lead to an increase in peak demand requirements, which in turn can cause higher-than-anticipated dependence on conventional generation sources.

Slow localization of EV components especially batteries: Currently the EV incentives in India can be divided into two areas. **On the demand side**, there are the central government's FAME incentives and also state government incentives. **On the supply side**, the PLI scheme provides 13-18% incentives to OEMs. While FAME incentives are applicable only until the end of F24, PLI scheme incentives will last until F27. The PLI scheme places a high focus on localization and scaling up EV production, which we believe will help in reducing costs and hence even post incentives, EVs could remain attractive on a TCO basis. However, failure to scale up EVs meaningfully before the incentives are removed could make them unattractive on a TCO basis.

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Stock Rating Category	Count	% of Total	Count	% of Total IBC	% of Rating Category	Count	% of Total Other MISC
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Equal-weight/Hold	1599	45%	326	47%	20%	709	46%
Not-Rated/Hold	1	0%	0	0%	0%	0	0%
Underweight/Sell	624	17%	80	12%	13%	220	14%
Total	3,577		694			1526	

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