



# SECURING INDIA'S GROWTH OVER THE NEXT DECADE

Twin Pillars of Investment and Productivity

**Citi GPS: Global Perspectives & Solutions**

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# SECURING INDIA'S GROWTH OVER THE NEXT DECADE

## Twin Pillars of Investment & Productivity

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Managing Editor, Citi GPS

When we developed the Citi GPS product, we chose to focus our interests on how to deliver sustainable and inclusive global growth and make globalization a positive force. When we're thinking about topics and debating over the importance of events, from climate change and gender equality to Brexit and populist elections, we try to drive the conversation back to the basic question of how whatever we're talking about will impact global growth. If we can bring the vast amount of issues being discussed throughout the world down to an economic argument, we believe it makes the debate richer and takes it from being philosophical to being grounded in the real world.

In this report, we look specifically at India and what types of pillars can be identified to drive the country's growth over the next decade. Although the past does not guarantee future results, we thought the best place to start the journey of how India can transform itself from an emerging economy to one that grows with a sustained GDP growth rate of 8%+, is to look at the lessons learned from countries which have already succeeded in this transition. We found that growth in labor productivity of over 6%, growth in investment of over 10% and growth in the overall efficiency of production (the Total Factor Productivity) to 3% were the three primary drivers of GDP growth across our sample of countries. The final piece in the growth puzzle was that poorer economies grow faster and in 60% of cases, those countries with 8%+ GDP growth had per capita income of less than \$10,000.

In order to achieve investment growth in the double digits and to create employment opportunities for its swelling labor force, India will need to industrialize further and target manufacturing as a share of GDP to rise to 25% by 2025 from its currently level of 18%. To do this, a new potential leading sector in manufacturing must be identified based on size, productivity, employability, and exportability. Our analysis identifies chemicals (including pharmaceuticals and petrochemicals) as a promising candidate to move up the value chain, as well as food processing and textiles & apparel.

In a previously Citi GPS report *Infrastructure for Growth*, we estimated that, on average, a 1% increase in infrastructure investment is associated with a 1.2% increase in GDP growth. In the case of India, we estimate that total infrastructure spend could be around \$3 trillion in the next 10 years bringing the infrastructure-to-GDP ratio up to 6.5-7%. Projects in physical infrastructure (power, ports, roads, rails, telecom), reforms in input markets (land and labor), focus on soft infrastructure (healthcare reforms, education) and the harnessing of resources (oil & gas, coal, cement, iron & steel) would all lead to higher productivity and growth rates.

Finally, exports as a productivity driver and employment creator could play a significant role in total factor productivity growth. If India can increase its exports-to-GDP ratio (including service exports) to at least 20% by 2021, India's exports could reach ~\$700 billion.

The result of all of this growth would be higher per capita income, increasing urbanization, and a shift in consumer patterns as India moves up the ladder from a low-growth to a high-growth economy.

# Mapping out the Growth Framework for India

There are **three types of growth driver** for the economy to get to 8%+ GDP growth:

## GROWTH IN INVESTMENTS NEEDS TO BE AT LEAST...

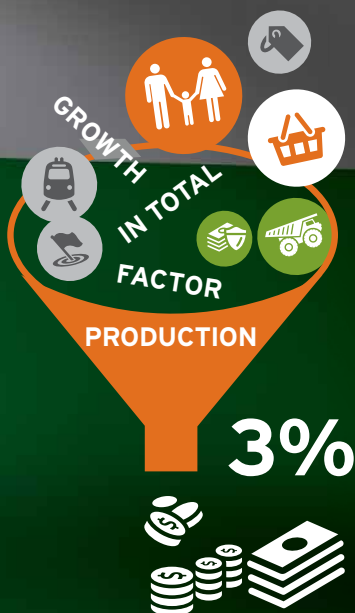
# 10%



GDP Growth		8%	7-8%	5-7%	3-5%	0-3%
Growth in investment	>10%	46%	41%	14%	9%	3%
	8-10%	22%	15%	15%	9%	3%
	5-8%	18%	24%	42%	37%	18%
	0-5%	13%	19%	26%	45%	76%
	0%	1%	2%	2%	2%	2%

# 2

GDP Growth		8%	7-8%	5-7%	3-5%	0-3%
Labor productivity growth	>6%	66%	27%	7%	1%	0%
	4-6%	25%	49%	34%	8%	1%
	2-4%	6%	16%	41%	47%	17%
	0-2%	2%	6%	14%	33%	54%
	0%	2%	2%	4%	10%	27%



# 3

GDP Growth		8%	7-8%	5-7%	3-5%	0-3%
TFP Growth	>3%	60%	37%	21%	8%	2%
	3-3%	12%	16%	20%	14%	3%
	1-2%	9%	13%	21%	24%	16%
	0-1%	7%	4%	13%	22%	27%
	0%	13%	30%	25%	32%	53%

The data in the tables represent percentage instances at different levels of GDP growth, i.e., if GDP growth is more than 8%, then in 46% of cases investment growth is more than 10%; in 66% of cases labor productivity growth is above 6%; in 60% of cases total factor productivity is above 3%.

## THE FRAMEWORK FOR ACHIEVING 8%+ GDP GROWTH INCLUDES...

Increase manufacturing share of GDP to **25% by 2025** from 18% currently. Sectors to focus on include:

Food processing

Textiles and apparel

chemicals (including pharmaceuticals and petrochemicals)



Complete infrastructure projects worth **\$3 trillion** (6-7% of GDP) over the **next 10 years** financed through public and private financing



Increase the **exports-to-GDP ratio to at least 20%** with exports reaching **~\$700 billion** by increasing participation in Global Value Chains



WHILE BEING AWARE OF  
POTENTIAL PITFALLS  
INCLUDING:



**Creating jobs** through the shift from agrarian to manufacturing and during a time of increasing automation



Creating administrative and **bureaucratic capacity**



**Legal reforms** and the predictability of law



Democracy and **political stability**

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# The Growth Framework

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## Investment and Productivity as Pillars of Growth

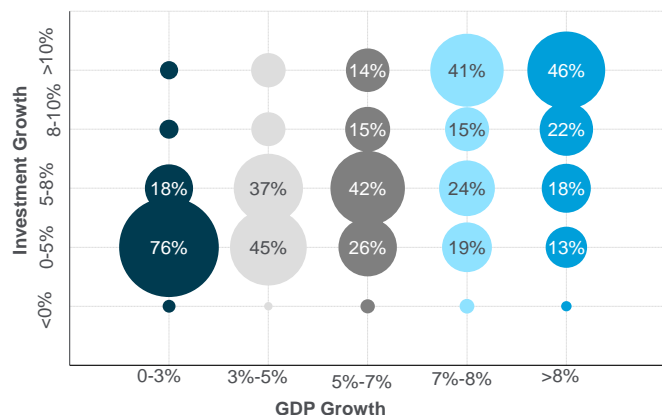
An emerging economy aspiring to grow at a sustained high gross domestic product (GDP) growth rate might gain from lessons offered by the historical growth patterns of similar economies. It is true that the initial conditions and growth drivers could be diverse for different economies but pooling together the experience of a large set of countries for a long period throws up some common trends. The Total Economy Database (TED) of the Conference Board provides us with a common dataset to undertake such an analysis where we focus on what are the primary drivers of a high growth economy. For our analysis we chose a panel of 26 countries and annual growth data from 1950 onwards, with a good mix of both developed and developing economies.

### What are the Growth Drivers?

A simple growth decomposition exercise indicates that output growth depends on both growth in the labor force and an increase in labor productivity. If we assume that growth in the labor force is mostly exogenous, then labor productivity can be altered by measures that improve human capital formation (education, skills etc.), increase the capital available (machinery, equipment) for each worker, and increase the overall efficiency of production embodied in Total Factor Productivity (TFP). Following this framework we choose growth in labor productivity, growth in investment, and growth in TFP as the primary drivers of growth in any economy and try to identify threshold levels of these parameters which have been associated with high levels of GDP growth in the past.

India's aspiration is to grow at double digits. However, keeping in mind the global growth context, India being a relative late entrant, and the political cross-currents of a low income democracy, we think that attaining even a sustained 8% growth rate will completely change the economic landscape in India. Hence, for our analysis we particularly focus on the 8%+ GDP growth club.

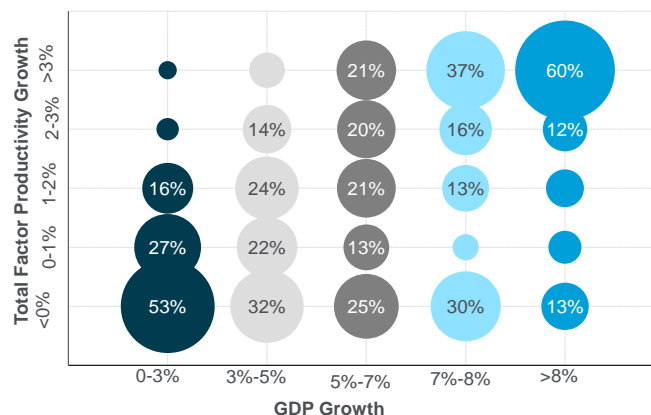
Figure 1. Investment Growth and GDP Growth



Note: Bubble size represents percentage of instances at difference levels of GDP growth — e.g., if GDP growth is more than 8% then in 46% of cases investment growth is >10%.

Source: TED, Citi Research

Figure 2. Total Factor Productivity Growth and GDP Growth



Note: Bubble size represents percentage of instances at difference levels of GDP growth — e.g., if GDP growth is more than 8% then in 60% of cases TFP growth is >3%.

Source: TED, Citi Research



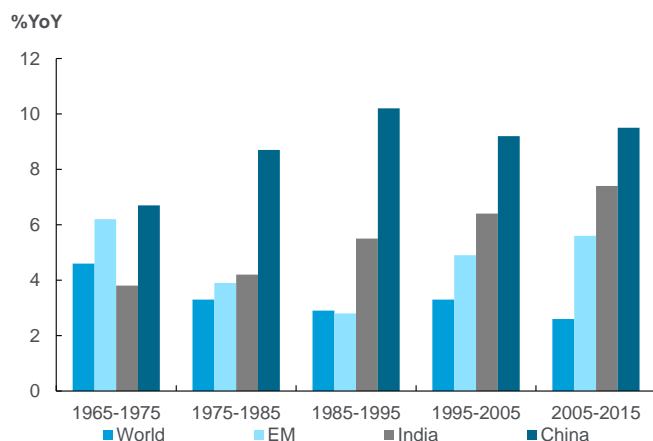
## How important is Investment Growth?

**Sample panel results:** In 46% of our panel data points, an 8%+ GDP growth rate was associated with a more than 10% growth in investments in that year. Conversely, if a country achieved 10%+ investment growth, then in 42% of cases the country was able to reach at least 8% GDP growth. The possibility of recording 8% GDP growth recedes substantially (to 22%) if investment growth is even a little lower, i.e., between 8 and 10%.

**Country experiences:** Within our sample countries, Japan and South Korea have consistently recorded 10%+ average investment growth over four decades (between the 1950's and 1980's). China achieved the same feat from the 1980's onwards. Even smaller countries like Vietnam, Indonesia, and Singapore had several decades of 10%+ investment growth which propelled them to a faster GDP growth trajectory.

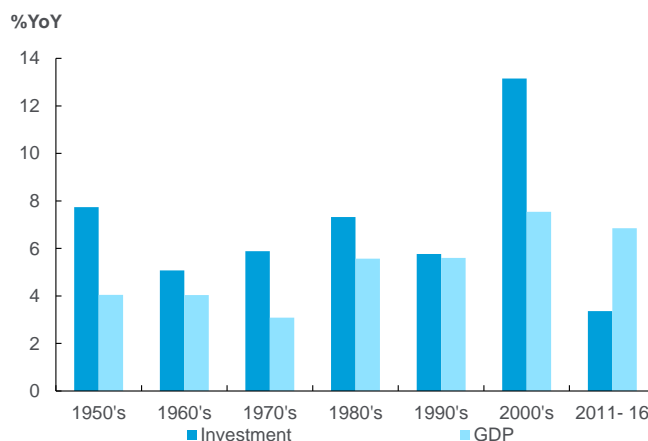
**Indian context:** India's investment growth has been in the range of 5–8% for most of the years between 1950 and 2003. Not surprisingly, the average GDP growth ranged between 3–7% over this period. Even for our larger sample of countries, 5–8% investment growth led to 3–7% GDP growth in 70% of cases. After 2005, India experienced an average investment growth rate of 11% for seven years, propelling GDP growth to average in excess of 8%. However after 2011, investment growth started moderating and the latest print of 6.5% in 2016 leaves significant scope for improvement.

Figure 3. India's High Growth is Not a 'Flash in the Pan'



Source: IMF, Citi Research

Figure 4. In the Past, 10%+ Investment Growth has been Rare in India



Source: CSO, CEIC, Citi Research

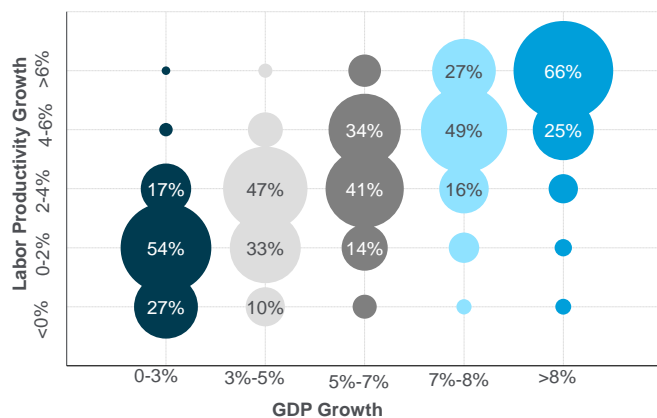
## Labor Productivity has improved in India

**Sample panel results:** Labor productivity, defined as output per employed person, grew in excess of 6% for the high GDP growth economies in our panel – in 75% of the cases GDP growth exceeded 8% if labor productivity growth was more than 6%. GDP growth mostly stays in the 5–8% range if labor productivity growth is a little lower, i.e., between 4 and 6%.

**Country experiences:** China experienced strong growth in labor productivity after the 1980's through a mix of better capital deepening and higher TFP. Japan had two decades of average labor productivity growth of 8% in the 1950's and 1960's. Post-war reconstruction efforts increased labor productivity in some of the European countries (Germany, Italy, Spain etc.) beyond the threshold of 6%. Some smaller countries like Israel and Saudi Arabia also witnessed a couple of decades of average labor productivity growth beyond 6% in the 1950's and 1960's.

**Indian context:** India's labor productivity growth averaged a dismal 1.7% in the 30 years between 1950 and 1980. It improved to an average of 3.8% in the next 20 years and shot up to an average 8% between 2005 and 2011 which were also India's best growth years. Since 2011, labor productivity growth has started decelerating and the 4.3% growth posted in 2017 was much lower than what is required to sustain GDP growth in excess of 8%.

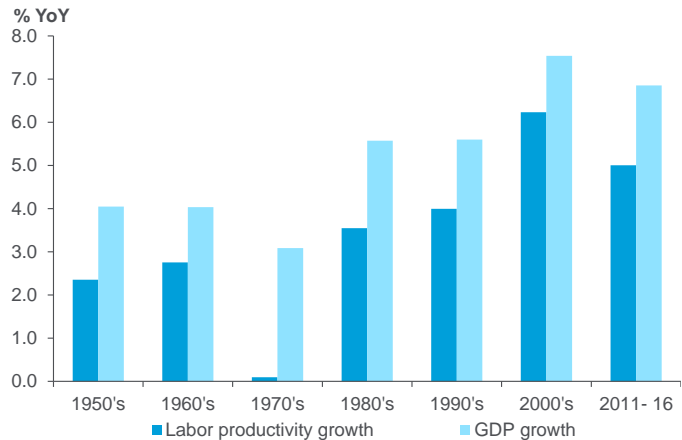
Figure 5. Labor Productivity Growth and GDP



Note: Bubble size represents percentage of instances at difference levels of GDP growth — e.g., if GDP growth is more than 8% then in 66% of cases labor productivity growth is >6%.

Source: TED, Citi Research

Figure 6. Labor Productivity has Improved Substantially in India



Source: TED, CEIC, Citi Research

## Lagging in Total Factor Productivity Growth

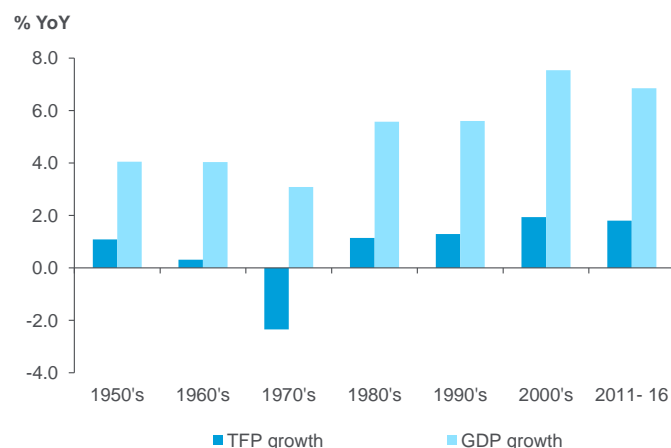
**Sample panel results:** In our sample, we find that 3% growth in TFP is a good threshold to explain high GDP growth economies. In 60% of the economies which experienced GDP growth of more than 8%, TFP growth was in excess of 3%. Conversely, TFP growth higher than 3% ensured that in at least 50% of the cases, the GDP growth for that year exceeded 8%. If TFP growth was between 2–3%, then in 66% of the sample points, GDP growth was between 3–7%.

**Country experiences:** Sustained average TFP growth of more than 3% was achieved only by China in the period from 1980 to 2010. Some other countries have sporadically achieved this feat — i.e., Japan (1960's), Germany (1950's), Brazil (1950's and 1970's), and Turkey (1950's and 1960's) — but sustaining this over a longer period has been a difficult task. In fact, after the Great Financial Crisis, no country in our sample has achieved average TFP growth of more than 3%.

**Indian context:** Low efficiency in production has been one of India's main growth challenges. TFP growth was just above 1% even in the 1980's and 1990's leading to GDP growth getting stuck in the 5–6% range. It improved to an average of 2.5% in the boom years of 2005 to 2011 but has again slipped to below 2% in the 5 years after 2011. In fact, India has never achieved consistent 3% TFP growth for a reasonable period, demonstrating why productivity improvement is likely to be such an important component of achieving a high GDP growth aspiration.

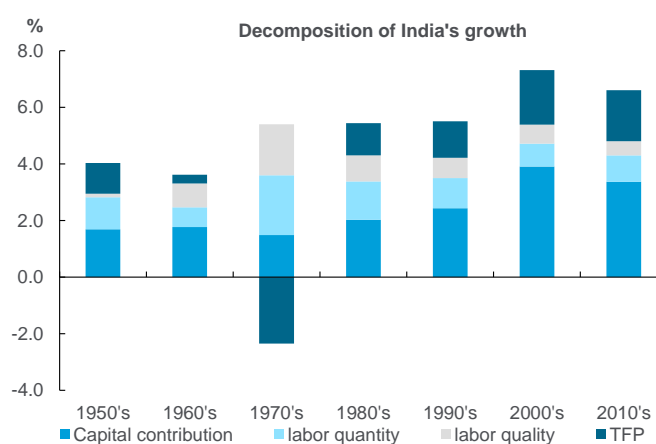
A simple decomposition of India's GDP growth reveals that the labor-intensive growth until the 1980's is gradually getting substituted by a more capital-intensive growth with TFP also sharing the burden. This progression needs to be continued to improve the quality and durability of GDP growth.

Figure 7. India's TFP Growth has been Consistently Below Par



Source: TED, CEIC, Citi Research

Figure 8. Growth Decomposition Shows Importance of Capital Rising



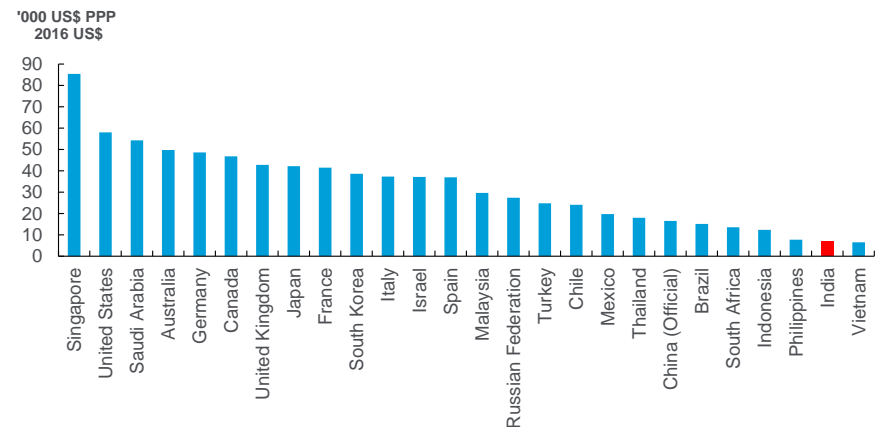
Source: TED, Citi Research

### Convergence of Growth – Poorer Economies Grow Faster

**Sample panel results:** Convergence of economic growth suggests that relatively poorer economies are likely to grow faster than richer ones. The TED database provides the per capita GDP of different countries adjusted for purchasing power parity (PPP) and converted to 2016 U.S. dollar terms. We find that for countries who have registered 8%+ GDP growth in a year, their per capita income was less than \$5,000 in 33% of the instances and between \$5,000 and \$10,000 in another 28%. This implies that more than 60% of the high-growth instances were for countries having less than \$10,000 per capita income even after a PPP adjustment. However, there are also proportionately large instances of low per capita income economies stuck in a low-level equilibrium trap of relatively slower growth persisting for a long period.

**Country experiences:** Most of China's high-growth decades (1980–2010) have been with per capita income at less than \$10,000. Even some of the East Asian economies (Korea, Thailand, Malaysia, Vietnam etc.) have grown the fastest when their per capita incomes were relatively low. Countries like Japan and Israel have seen their GDP growth rates dropping from more than 8% in the 1950's and 1960's to 6% or below as their per capita income has grown substantially beyond \$10,000. Saudi Arabia and some of the post war reconstructing European economies are exceptions, growing at more than 10% despite much higher per capita income. On the other hand, countries like Indonesia, Philippines, Turkey, and Chile have not been able to grow at more than 8% on a sustained basis despite per capita income lagging much below the \$10,000 mark.

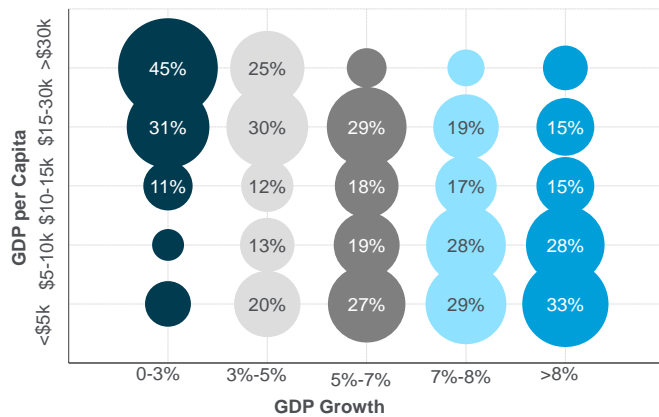
Figure 9. India's Low Per Capita Income Could be a Favorable Initial Condition



Source: TED, Citi Research

**Indian context:** India's per capita income (~\$7,000 in 2017, PPP adjusted, converted to 2016 U.S. dollars) is one of the lowest amongst our sample countries. This suggests that India could have several years of strong growth before it reaches even the \$10,000 per capita mark. In that context, the convergence of growth argument is in India's favor but it needs to avoid the perils of getting stuck in a low (or mid) level equilibrium trap.

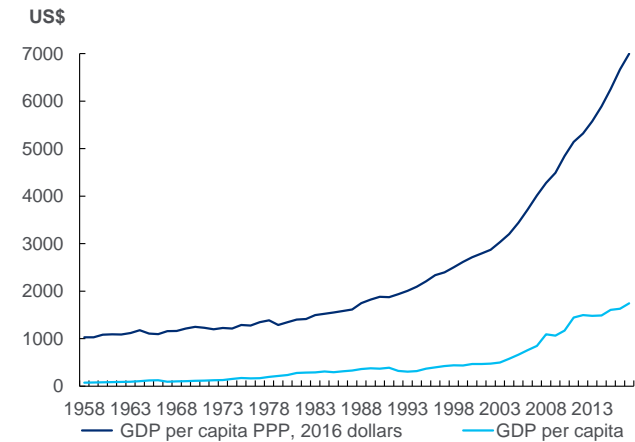
Figure 10. Per Capital Income as a Driving Factor in GDP Growth Levels



Note: Bubble size represents percentage of instances at difference levels of GDP growth — e.g., if GDP growth is more than 8% then in 33% of cases GDP per capita is less than \$5,000.

Source: TED, Citi Research

Figure 11. India's Per Capita Income Has Seen Explosive Growth



Source: TED, CEIC, Citi Research

In this report our endeavor is to explore the different ways in which India will be able to increase investment growth, improve its labor productivity, and also boost efficiency by undertaking structural and sectoral reforms. These drivers have the potential to sustain India's growth at above 8% as the country benefits from the favorable initial condition of low per capita income.

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## How to Achieve Double-Digit Investment Growth

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## Investment: Aiming for 10% Growth

Our panel data analysis at the beginning of the report shows that a sustainable GDP growth of 8% is associated with annual investment growth of 10%+ for a country. Considering the fact that India enjoyed a double-digit investment growth from FY04 to FY11 before recently slowing down to mid-single digits, the aim of achieving sustained 10%+ investment growth should be within the realm of possibility.

### The Golden Age of Investments: 2004-2011

During the period FY04 to FY11 — a period that includes the Great Financial Crisis — India's GDP expanded by an average of 8.3% year-over-year (YoY) and investments recorded an average growth of 14.9%YoY. In nominal terms, annual investments almost quadrupled from \$168 billion to \$628 billion. Some of the defining characteristics of this golden period of investments are summarized below:

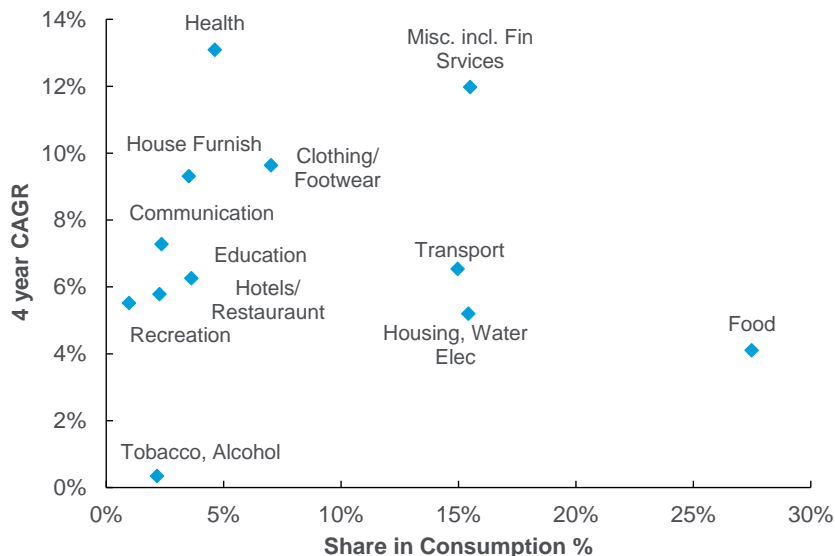
- **Healthy balance sheets of economic agents:** The investments during the period of FY04 to FY11 stood at 34.4% of GDP and saw strong participation across economic agents. The share of households in investment was largest at 12.5% of GDP followed closely by the private corporate sector at 12.3% of GDP. Public investments contributed an average 8.3% of GDP during the period.
- **Spear headed by Industrial sector:** Some of the fastest pace of investment growth during FY04-FY11 was seen in the area of mining (25% compound annual growth rate, CAGR), organized manufacturing sector (20% CAGR), and trade, hotels & restaurants (33% CAGR) among others.
- **Aided by strong domestic and external demand conditions:** On the demand side, domestic consumption rose by around 7.6% YoY in the period while exports recorded a robust growth of 22% YoY.
- **Supportive credit and financial market:** The average bank credit growth during the period was 24%, providing the necessary growth capital. Even on the external front, the period saw a sharp increase in gross foreign direct investment from \$4 billion in FY04 to \$35 billion in FY11 and a stable Rs/US\$ at 45-46 levels.

### A Pause that Refreshes

If the ascent felt great, the descent was spectacular too. Investment growth tumbled to 3.9% YoY in FY12 and averaged 3.4% in the period from FY12 to FY17. In nominal terms, annual investments were only marginally up at \$688 billion in FY17 from \$628 billion in FY11. In contrast to the high growth period, this period was characterized by excess capacity in the industrial and infrastructure sectors, distress in corporate balance sheets, rising bank non-performing assets (NPAs), declining household investments, and weak external demand. Some of the other reasons behind the slow investment growth in this period could be summarized as:

- A skew in consumption demand towards capex-lite services sector such as healthcare, financial services, etc. as opposed to capital-intensive sectors such as utilities, transportation, and housing in the period.

Figure 12. Consumption Growth Skewed More Towards Capital-Lite Services Sector



Source: CEIC, CSO, Citi Research

- Better sweating of capital goods and enhanced capital efficiency through leasing services.
- External conditions were not favorable as reflected in weak exports demand, excess global capacity, and slow global capex recovery.

Yet to give credit where it is due, the period of investment meltdown did not go waste. The slowing growth and weak investment climate triggered a slew of structural reforms — from changes in monetary policy and fiscal policy framework to radical changes in the taxation regime and banking reforms — the result of which could begin to bear fruit as the cyclical downturn troughs out and balance sheets repair.

### \$2 Trillion Investment – Quantifying the Opportunities and Challenges

The scenario of double-digit investment growth and GDP growth reaching 8% over next decade would push investments from around 30% of GDP in FY17 to ~35% of GDP in FY27, which is still lower than the historical level of 39% of GDP achieved in FY12, and therefore appears achievable. In aggregate terms, even as nominal GDP could rise from \$2.2 trillion in FY17 to \$6.8 trillion in FY27, gross capital formation could increase from \$0.7 trillion annually to ~\$2.4 trillion. According to our estimates, the private corporate sector would remain the largest source of investments rising from \$272 billion to \$905 billion over next 10 years, while households (including small enterprises) will be a close second, rising from \$228 billion to \$834 billion from FY17 to FY27. Finally, public investments could rise from \$157 billion to \$563 billion in the same period.

The financing of these investments is projected to come largely from domestic savings, particularly the households sector contributing around \$1.5 trillion in FY27 vs. \$0.4 trillion in FY17, followed by private corporate sector rising to \$0.7 trillion in FY27 from \$0.3 trillion currently. The overall domestic savings could amount to around \$2.3 trillion by FY27, leaving a savings investment gap of around \$82 billion. Keeping with the savings investment gap identity, the current account deficit could rise to \$82 billion (~1.2% of GDP) in FY27 from \$15 billion in FY17.



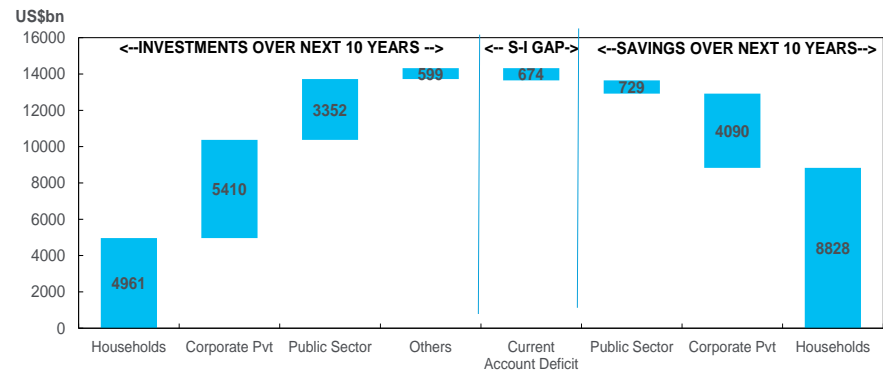
Figure 13. The Path to \$2 Trillion Investments

FY	FY02	FY07	FY12	FY17	FY22	FY27
GDP US\$ bn	518	948	1,824	2,264	3,809	6,814
<b>Investments US\$ bn</b>	<b>115</b>	<b>338</b>	<b>710</b>	<b>688</b>	<b>1,225</b>	<b>2,401</b>
Households	63	113	290	228	426	834
Private Corporate	26	138	242	272	462	905
Public Sector	36	79	137	157	287	563
Others	(4)	9	41	30	51	100
<b>Domestic Savings</b>	<b>123</b>	<b>328</b>	<b>632</b>	<b>672</b>	<b>1,161</b>	<b>2,319</b>
Households	115	220	431	399	754	1,508
Households – Financial Assets	52	107	134	165	334	668
Private	16	75	173	247	343	686
Public	(8)	34	28	27	63	126
<b>Savings-Invest Gap/ Current Account Deficit</b>	<b>(8)</b>	<b>(10)</b>	<b>(78)</b>	<b>(15)</b>	<b>(65)</b>	<b>(82)</b>

Source: CSO, CEIC, Citi Research

If these investment trends are to materialize then cumulative investment over the next ten years is estimated to be \$14.3 trillion, of which, the largest share will be private corporate investments at \$5.4 trillion, followed by household investments of \$5 trillion. Public sector investment of \$3.3 trillion, predominantly in infrastructure could also be significant over the next 10 years. In terms of financing the investments, the household savings could amount to \$8.8 trillion (with gross financial savings at \$5.2 trillion over the next decade vs. \$2 trillion in the previous decade) while the private corporate savings could amount to \$4 trillion in next decade vs \$1.7 trillion in the previous decade.

Figure 14. The Investment Boom and Its Financing over the Next Decade



Source: Citi Research

In the following section, we delve into the cyclical and structural catalysts that could help the revival of investments across public, private, and household sectors and the likely challenges that will be faced.

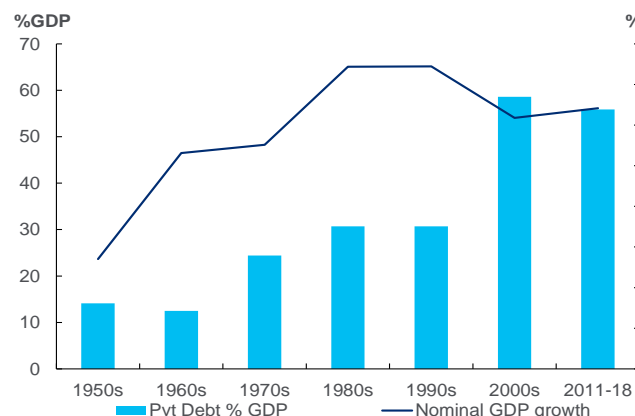
## Private Investment – The Six Catalysts

Given that private investment remains the largest component of overall capital formation, the recovery in private investment remains a prerequisite for investment growth to rebound to double digits. The six catalysts that could help investment recovery are dissipating headwinds of corporate leverage, resolution of banking sector non-performing asset (NPA) problems, supportive global conditions, the low and stable interest rate regime, return of profitability, and animal spirits and finally sustained reforms.

### Dissipating Headwinds of Corporate Leverage

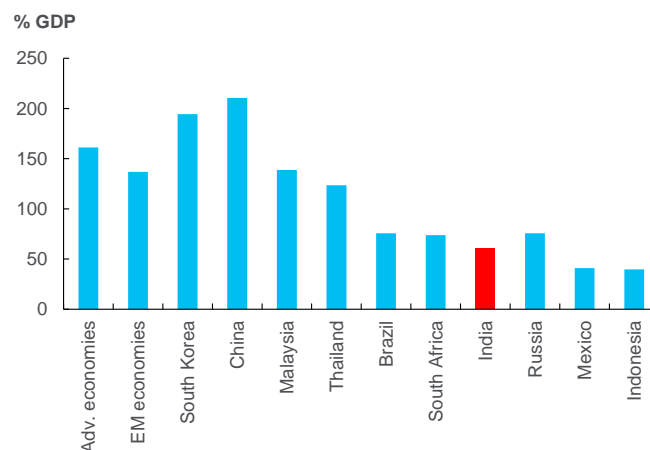
The Economic Survey for 2016-17 noted that around 40% of India's corporate debt was held by corporates with an interest coverage ratio of less than one which suggests an acute stress in the corporate sector. As discussed in the survey, some of this can be attributed to an over-leveraging in the past boom cycle especially in the infrastructure sector (power, steel, telecom), and a course correction may be warranted (aided by regulatory and legislative measures). Furthermore, with asset sales by leveraged companies and fresh capital raising the corporate leverage could ease up. However with India's private sector debt-to-GDP at less than 60% of GDP, considerably below the Emerging Market (EM) average of 137% of GDP and Advanced Economy (AE) average of 160% of GDP, we believe there is large scope for India Inc. to take up good debt even while the bad debt problem clears up. Roughly even a 16% annual increase in private debt would lever up private debt to close to 80% of GDP, still a favorable condition among the rest of the EM pack.

Figure 15. Deleveraging Underway in Private Non-Financial Debt



Source: BIS, CEIC, Citi Research

Figure 16. Global Comparison of Private Debt



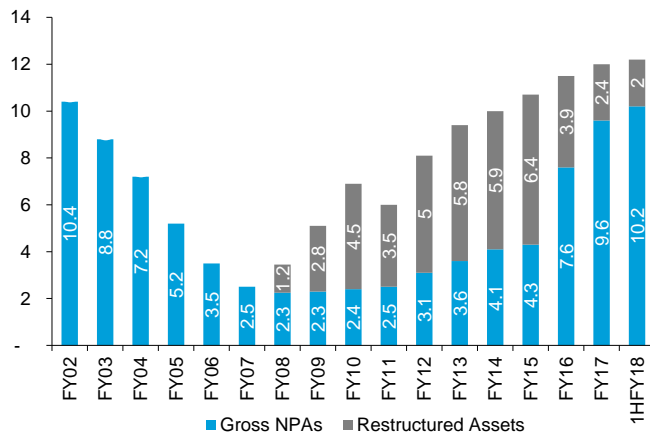
Source: BIS, Citi Research

### Resolution of Banking Non-Performing Assets – Preparing for the Next Decade of Growth

Proper disclosure of asset quality in the banking system raised the level of stressed assets to 12% of overall assets in FY17 from around 6% of total assets in FY11. The level of stressed assets in the Indian banking system remains one of the highest in the world, almost comparable to the peripheral European countries and impacting the ability of the banks to lend further. The Government and the Reserve Bank of India (RBI) have been in search of adequate measures to address this problem and their efforts have seen meaningful acceleration in the recent past.

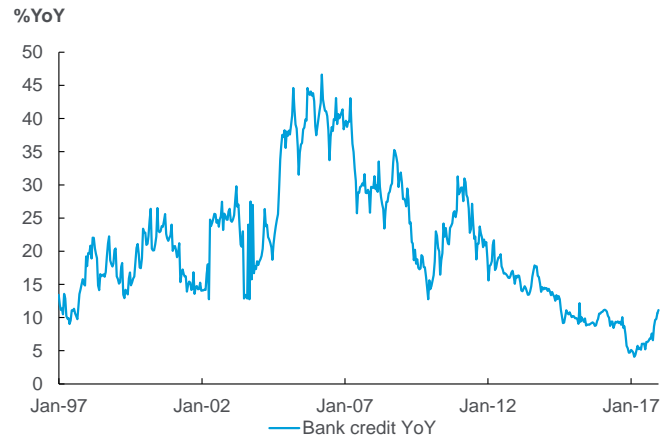
The enactment of the new Insolvency and Bankruptcy Code (IBC) process and larger-than-expected bank-recapitalization plan at Rs2.11 trillion (\$32.8bn) has accelerated the recognition and resolution of banking sector NPAs, enabling the public sector banks to restart the lending cycle. The bank credit growth that dipped to close to 5% YoY has begun to rebound and has now reached 10% YoY, though it remains considerably below the 24% growth seen during the high investment growth period of FY04-11. As estimated earlier, even a 16% growth in credit over the next 10 years could keep overall debt within 80% of GDP, significantly lower than the EM average.

Figure 17. Banks NPAs at Historic Highs but Could Moderate Now



Source: RBI, CEIC, Citi Research

Figure 18. Credit Growth Begins to Rebound



Source: RBI, CEIC, Citi Research

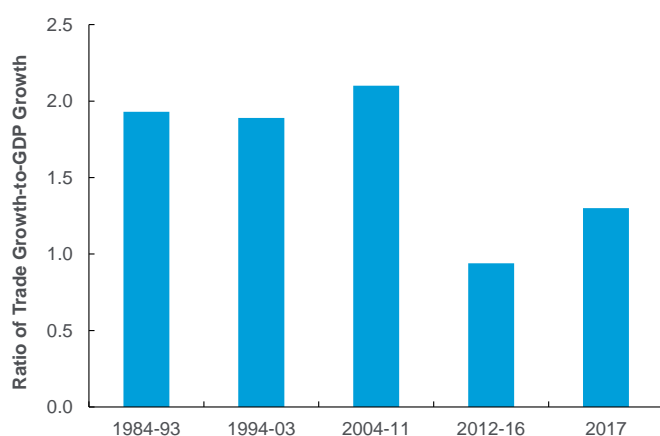
## A Recovery in External Demand

As discussed in the exports section of the report, even though India's growth story has been connected more with domestic demand, the important role played by exports is often understated. Exports-to-GDP ratio was just 6% in early the 1990's when the external sector was opened up and in a little more than 20 years the ratio went up to 25% in 2013. In the process India has trebled its share of world exports from 0.6% in the mid-1990's to 1.8% in 2013. It is a little concerning that the exports-to-GDP ratio declined after that to 20% in 2016. Export growth, which averaged 18% between 2002 and 2008, has fallen to only 3% during 2012-16. A higher share of exports would not only increase investment opportunities in India but also improve productivity as exporters respond to competitive challenges by improving the quality of their products.

It is therefore notable that the elasticity of global trade, measured as the ratio of world trade volume growth to world GDP growth based on World Trade Organization (WTO) data, had ranged between 1.5 and 3.4 in the period of 2004-2011 before declining to 1 or slightly below in the period from 2012 to 2016. In the period 2004-2011, India's exports grew 2.1 times the global exports growth rate. Therefore the impact was more magnified for India and the decline in elasticity of trade coincided with the deceleration of investment demand in India.

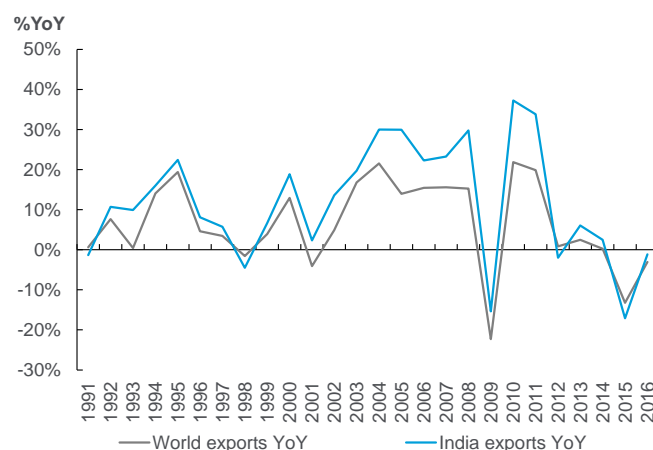
While it may be early to say, there are signs of a rebound in the elasticity of trade with the WTO estimating the ratio at 1.3 in 2017 which is also reflected in India's strong exports growth after five years of flat to negative growth. With global growth broadening and deepening across economies and sectors, the outlook for trade could become even more buoyant. This could be India's opportunity to explore the "Make in India" model of export-led growth which could kick-start the next leg of the investment cycle. The government think-tank, Niti Aayog, in its Three Year Action Agenda has endorsed the export-led growth model of countries like South Korea, Taiwan, Singapore, and China. In that respect the Niti Aayog proposal includes the formation of coastal employment zones on the East Coast and the West Coast with a liberalized regulatory regime.

**Figure 19. World Trade Elasticity (Ratio of World Trade Volume Growth to World GDP Growth)**



Source: WTO, Citi Research

**Figure 20. Exports Growth in India has been In-line with Global**

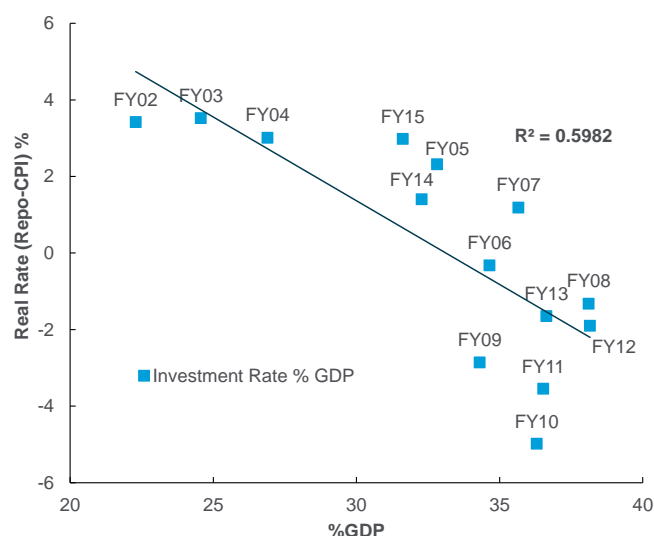


Source: WTO, Citi Research

### Macro Stability Including Low and Stable Interest Rate Regime

One of the proximate causes for the decline in investments from FY12 onwards has been the accentuation of macro instability as reflected in high inflation, high interest rates, higher deficits, and a depreciating currency. This issue has been addressed through a formal adoption of a flexible inflation targeting framework by India's central bank with attendant benefits for inflation and interest rates, as well as on the real exchange rate front. The consumer price inflation that ranged between 3.8% and 12.3% and averaged 7.1% during the period FY04-FY11 is likely to stay lower and stable within the 4%+/-2% range and consequently inflation expectations could stay anchored. The lower and stable inflation regime therefore is likely to allow nominal rates and real rates to drift lower over the longer term and become a tailwind for investment growth. We note that India's real rates are one of the highest among the world at around 200 basis points compared to the global average of 15 basis points, so clearly there is space for real rates to come down. Our study also shows that lower real rates are positively correlated with investment recovery, though much will still depend on the return of "animal spirits".

Figure 21. Real Rates – Tend to Impact Investments



Source: CSO, CEIC, Citi Research

Figure 22. Real Policy Rates – One of the Highest in the World

	2018-19 Average
Russia	4.83
Brazil	4.77
India	2.20
Turkey	1.87
Mexico	1.67
China	1.60
South Africa	1.57
Indonesia	0.73
Taiwan	0.49
U.S.	-0.22
Korea	-0.45
Australia	-0.47
Japan	-0.70
Canada	-0.74
Norway	-1.20
Euro	-1.45
U.K.	-2.26
GLOBAL AVERAGE	0.15

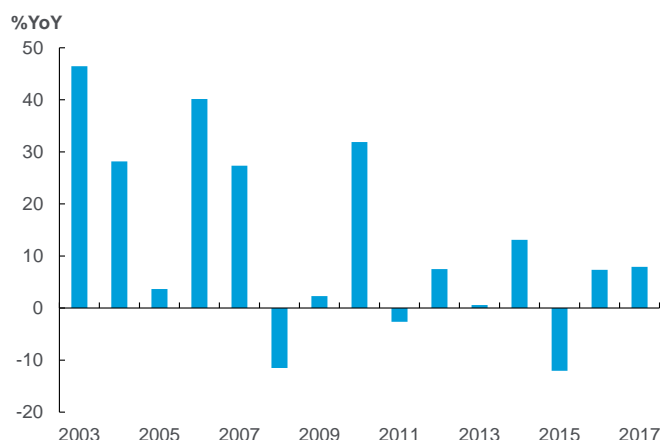
Source: Citi Research 2018 Global Economic Outlook and Strategy, Calculated as nominal policy rate adjusted for 1 year ahead inflation

### Revival of Animal Spirits – Return of Profitability, Competitive Tax

An essential pre-condition for animal spirits to revive among private investors will be the return of profitability. Low corporate earnings growth in the last ten years, especially after the Great Financial Crisis, has been a drag on private capital expenditure recovery. Corporate profitability as seen from BSE 500 company earnings growth is showing some signs of recovery in 2016 and 2017 to 7-7.5% (quarterly trends in 2018 earnings are headed even higher), however it still remains low compared to pre-financial crisis levels.

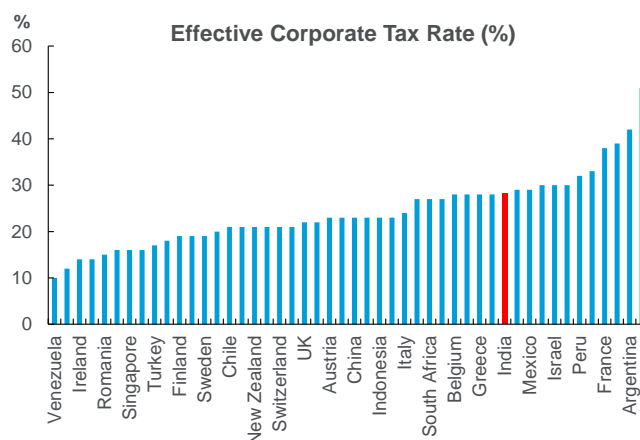
Among other catalysts, the tax rate in India has room to come down. It is rather worrying that between FY14 and FY16, India's effective corporate tax rates have mostly gone up despite tax rate cuts for smaller companies. The effective tax rate which Indian firms with taxable income exceeding Rs100 million (\$1.5mn) pay is around 28% (statutory corporate tax rate of 35% is among the highest), and is comparable to emerging market peers such as Mexico and Brazil but higher than most other countries including China. Any other competitive corporate tax rate cuts post the new U.S. regime, could also necessitate a need to adjust India's corporate tax rate cuts. In terms of composition, the corporate tax has room to become more progressive (smaller firms tend to have higher taxation), and currently favors capital-intensive industries. The direct tax reforms committee constituted in December 2017 is likely to take a considered view on this matter and suggest a move towards lower tax rates while reducing the plethora of exemptions to have a more streamlined tax system.

Figure 23. Still Low on Profitability – BSE 500 Earnings (% YoY)



Source: Bloomberg, Citi Research

Figure 24. Effective Corporate Tax Rate Has Room to Come Down



Source: Study by Aswath Damodaran, NYU-Stern, Citi Research

## Reforms, Productivity and Investment – The Feedback Mechanism

The government thrust on structural reforms (Ease of Doing Business, factor market improvement, indirect and direct tax reforms, continued liberalization) and improving productivity parameters (corporate profitability, healthy balance sheet) could help a revival in private investments. Reforms remain the buzzword in Indian policymaking despite political compulsions of a competitive democracy. Reform-driven capital investments by a firm could by itself enhance productivity and offer scale benefits leading to a further increase in investments. Clearly the virtuous cycle could be set in motion with a relentless pursuit for globally competitive and high productivity enterprises.

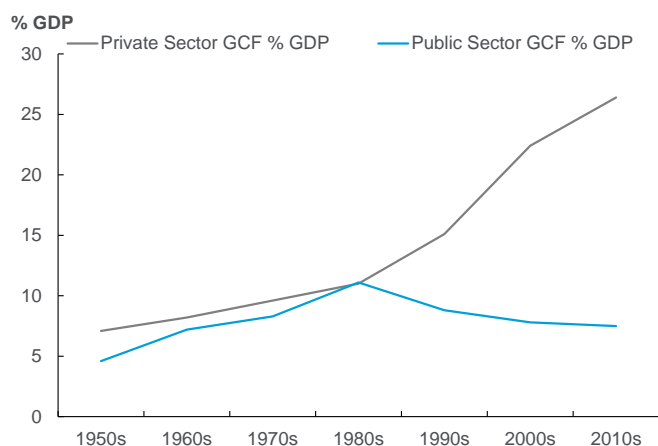
## Public Investments - Crowding In

### Sustaining Public Investment within Fiscal Constraints

Before the economy was liberalized in 1991, the government and public sector enterprises were the dominant source of investments in India when compared to the private sector. Deficit spending lifted the government's outstanding debt to around 70% of GDP, higher than the Emerging Market average of 40-45% of GDP and began to constrain the fiscal policy space. As a result, the share of public investments in overall capital formation has been moderating since the 1990s, but it still remains significant at 7.5% of GDP. Especially in the area of infrastructure investment, the public investment contribution has been as high as two-thirds.

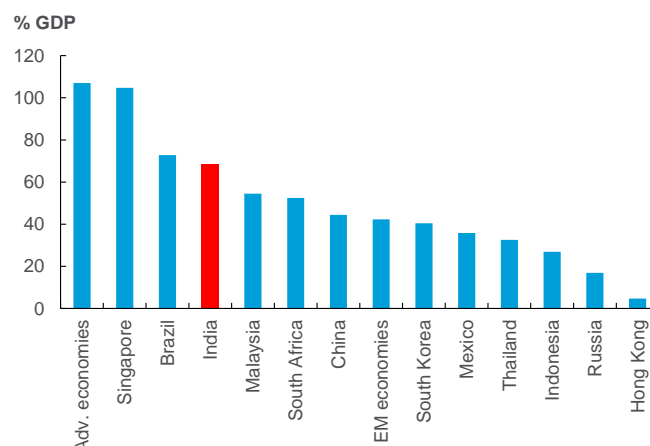
To be sure, some fiscal space could be created on both the revenue and expenditure side with a concerted focus. For example, the continued push on direct and indirect tax compliance could enhance India's tax revenues which at less than 18% of GDP are the lowest among the BRIC countries and significantly lower than the OECD average of 34% of GDP. Furthermore, the share of capital expenditure in the government's total expenditure can increase from the current 12% level with continued compression on subsidy expenditure (down from a peak of 2.6% of GDP to 1.6% of GDP recently) including through targeted subsidies (DBT). While these two measures could easily add around 1% to 2% of GDP to the government's capital expenditure, the public sector enterprises (CPSEs) could provide additional internal and extra budgetary resources to fund for capital expenditure.

Figure 25. Capital Expenditure as % of GDP



Source: CSO, Citi Research, Private sector spend includes Households

Figure 26. Comparison With EM Public Debt

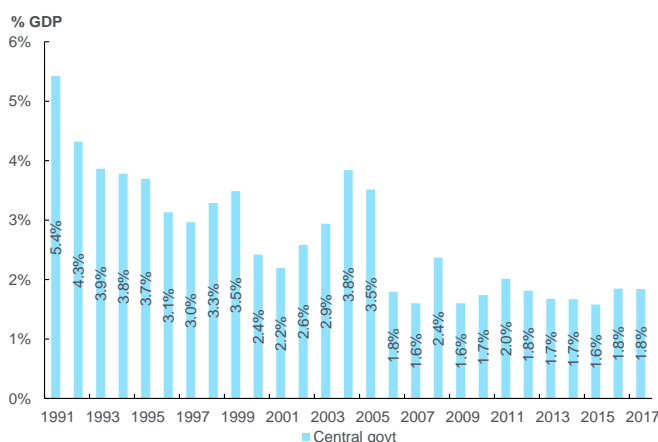


Source: BIS, Citi Research

### Public Capex Demand Shared Between State and Center

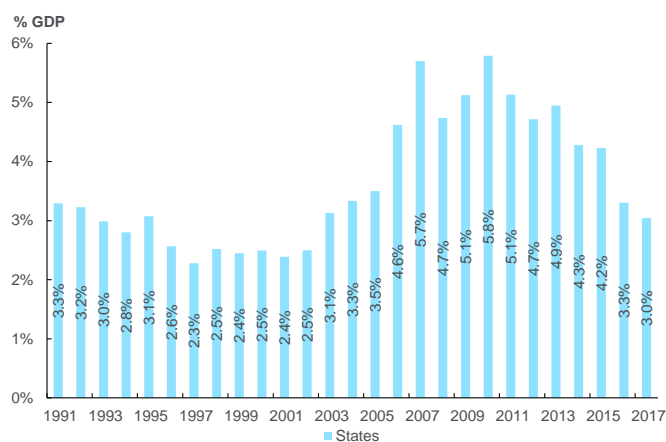
Between the central and state governments, it is the state governments that have been able to maintain their capital expenditure thrust for the last 25 years, with overall capital expenditure 3% of GDP in 2017 compared to 3.3% in 1991. The central government, on the other hand, has seen a decline in capital expenditure from 5.4% of GDP to 1.8% of GDP. However, if the investments of central public sector enterprises are combined with the central government's budgeted expenditures, then the combined share could likely be above state governments. Not only is the capital expenditure of state governments higher, but the growth multiplier of state government capital expenditure is also higher as found by a recent RBI paper<sup>1</sup>. The paper attributes the difference to concentrated spending by state governments as opposed to the broad spread of programs pursued by the central government.

Figure 27. Central Government – Capital Expenditure as % of GDP



Source: Economic Survey, Citi Research

Figure 28. State Government – Capital Expenditure as % of GDP

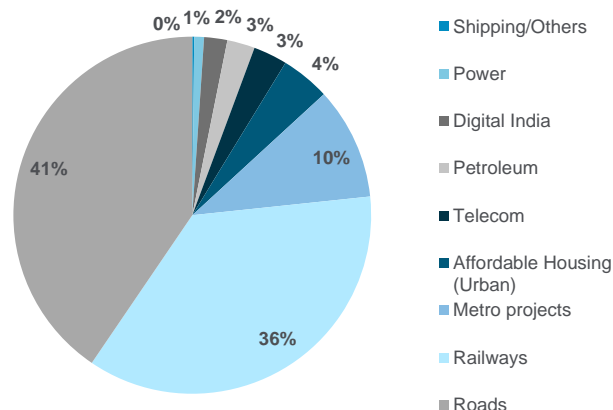


Source: Economic Survey, Citi Research

<sup>1</sup> <https://rbi.org.in/scripts/PublicationsView.aspx?id=15369>

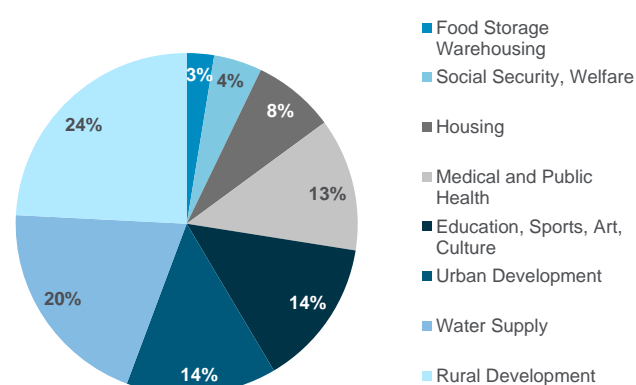


Figure 29. Central Government Capital Expenditure Distribution (FY19)



Source: Budget Documents, Citi Research

Figure 30. State Government Capital Expenditure Distribution (FY17)



Source: RBI, Citi Research

### Varying Investment Potential of States – Stimulating the Laggards

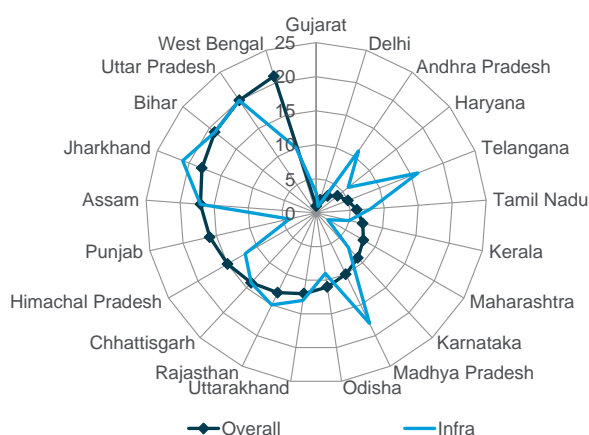
At the sub-national level, there is a wide variation among states in terms of factors of production and investment attractiveness. To lift the overall public investment by states, it is imperative for the lower-ranked states to modify their approach towards public investments and attracting private investments. Based on the 2017 NCAER State Investment Potential Index, that creates a composite index using six broad pillars categorized as factor driven (land and labor), efficiency driven (infrastructure), growth driven (economic climate, governance and political stability) and perceptions driven (responses to the survey), Gujarat and Delhi have stayed at first and second rank for two consecutive years. Economic climate and infrastructure remain a significant determinant of a states' ranking though there are certain notable exceptions. For example while Andhra and Telangana rank poorly in terms of infrastructure, the overall investment potential ranking is within the top 5. Similarly for states like Punjab, even though infrastructure is within the top 5, the overall attractiveness is poor.

Figure 31. NCAER State Investment Potential Index

	Overall	Survey	Labor	Infra	Economic	Governance & Political Stability	Land
Gujarat	1	1	8	3	1	2	5
Delhi	2	6	14	1	2	20	8
Andhra Pradesh	3	2	2	11	11	13	6
Haryana	4	4	15	6	10	1	9
Telangana	5	3	3	16	6	15	2
Tamil Nadu	6	17	1	8	4	5	3
Kerala	7	7	6	5	17	11	10
Maharashtra	8	20	4	2	5	10	7
Karnataka	9	15	5	7	7	7	16
Madhya Pradesh	10	8	20	18	14	8	1
Odisha	11	11	12	9	15	12	13
Uttarakhand	12	16	11	13	3	3	20
Rajasthan	13	13	9	15	13	19	12
Chhattisgarh	14	10	13	14	8	6	21
Himachal Pradesh	15	5	18	12	16	21	14
Punjab	16	9	16	4	21	4	17
Assam	17	14	19	17	18	16	19
Jharkhand	18	12	21	21	12	17	15
Bihar	19	18	10	19	19	18	18
Uttar Pradesh	20	19	7	20	20	14	4
West Bengal	21	21	17	10	9	9	11

Source: NCAER, Citi Research

Figure 32. Ranking vs. Infrastructure



Source: NCAER, Citi Research

## Enhancing the Fiscal Multipliers Through Quality of Spend

India is among the high fiscal multiplier countries as structural rigidities in the economy tend to enhance the response of fiscal shock/stimulus. Besides structural factors, the fiscal multipliers also get a boost in a period of negative output gaps and lower interest rates. With India's growth likely to be 6.5% in FY18, we estimate the cyclical multiplier at 1.24 as per IMF methodology.<sup>2</sup> Furthermore, with interest rates closer to the effective lower bound (repo at 6%) we also estimate the monetary condition multiplier at 1.26. As a result of these, we estimate the final fiscal multiplier at 1.1-1.6 for India, which is higher than China (0.6-1.1) and even higher than the United States (1-1.4) per the IMF study.

Drilling further, an RBI study found that the growth multiplier of state government capital expenditure is slightly above 2, while for the combined state and central government the growth multiplier of capital expenditure is around 1.3. This compares with the revenue expenditure multiplier of 0.6 and 0.37, respectively. Given the large difference in multipliers, the quality of fiscal expenditure by state and central government becomes important. Secondly, while the government remains committed to the fiscal consolidation efforts, the RBI study shows that a consolidation through an increase in tax revenue may have a less contractionary effect on GDP than a reduction in expenditure. As a result, a concerted effort to increase tax compliance including through the rollout of a Goods & Service tax (GST) and Direct tax reform remains important.

## Crowding in Private Sector and Reviving PPP

An IMF paper<sup>3</sup> estimated that in the post-liberalization era, an increase in public investment of one rupee “crowds in” private investment of 0.37, 0.16, and 0.07 rupee after the first, second, and third year, respectively. Cumulatively the multiplier stands at 0.6 for private investment, which enhances the attractiveness of public sector investments. Beyond this, a revival of public private partnerships (PPP) will still be necessary considering the large infrastructure deficit and investment needs. The Niti Aayog in its Three Year Action Agenda document recommends a course correction in the PPP model. Specifically, it recommends the constitution of an infrastructure committee headed by the Finance Minister or Prime Minister to resolve inter-ministerial policy issues/stalled projects, curb aggressive bidding by assigning weightage to different parameters rather than just financial offers, and strengthen dispute resolution mechanisms (such as the introduction of a Public Utility Bill), among others.

**Figure 33. Policy Measures Announced and in Pipeline Strengthening PPP Framework**

Proposal	Details	Status
Resolution of bank NPA issue	Insolvency and bankruptcy code and bank recapitalization helps early resolution	Implemented
Operationalization of national investment infrastructure fund (NIIF)	NIIF creates \$3 billion investment platform with Dubai's DP World	Implemented
Constitution of infrastructure committee	Headed by FM or PM to resolve inter-ministerial policy issues/stalled projects	Partially Implemented
Curbing of aggressive bidding	By assigning weightage to different parameters rather than just financial offers	To be implemented
Strengthened dispute resolution mechanism	Such as introduction of Public Utility Bill	To be implemented
Providing low cost debt instruments	Zero coupon bonds, IIFCL credit enhancement	To be implemented

Source: Three Year Action Agenda, Niti Aayog, Citi Research

<sup>2</sup> Fiscal Multipliers: Size, Determinants, and Use in Macroeconomic Projections; Prepared by Nicoletta Batini, Luc Eyraud, Lorenzo Forni, and Anke Weber; September 2014.

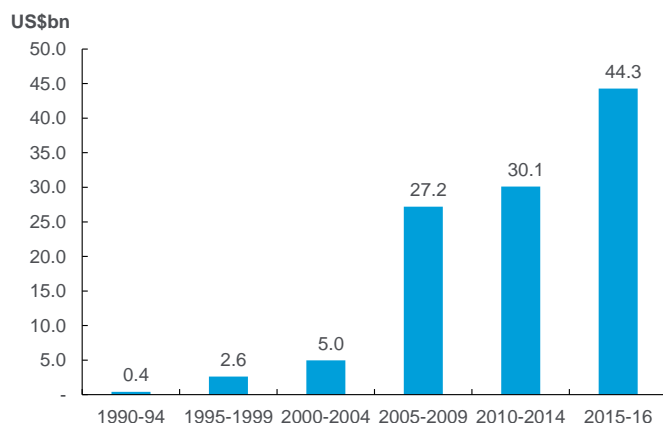
<sup>3</sup> <https://www.imf.org/external/pubs/ft/wp/2015/wp15264.pdf>

## FDI Inflows – Sustaining Momentum

Post-liberalization, the foreign direct investments (FDI) to India have seen significant acceleration from virtually zero in the early 1990s to around \$45 billion in 2015-16. As a share of GDP, the FDI comprises around 2% of GDP. In fact as per the World Investment Report by UNCTAD, the top three prospective destinations for FDI investors are the United States, China, and India. Even in the AT Kearney FDI Confidence Index, India ranked 8<sup>th</sup> in 2017, second behind China among all the EM economies.

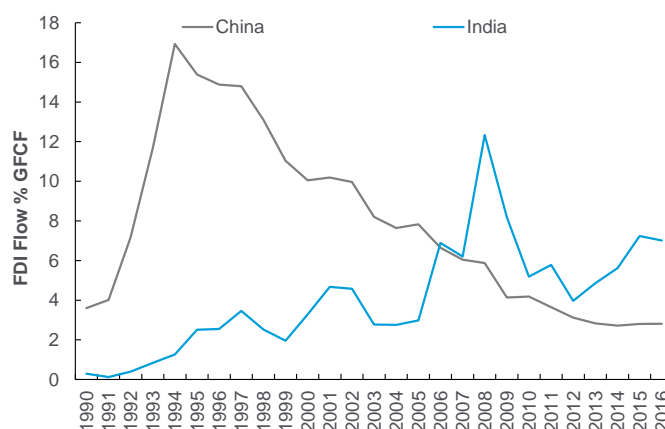
Most investors consider the size of the Indian market and promising growth prospects as the key catalysts. However, the importance of governance and regulatory issues is growing in investors' minds and hence India's policies need to be geared towards addressing those issues. The FDI flow in India as a percent of gross fixed capital formation is almost half of the level achieved by China in the 1990s leaving no room for complacency. In our view, FDI into India has a longer runway and considering the encouraging trends in the past five years, the FDI share in investments is likely to increase further. Further liberalization measures, easier regulatory burden, and continued macro stability is likely to augur well in sustaining the momentum.

Figure 34. FDI Flows in India Gaining Momentum...



Source: UNCTAD, Citi Research

Figure 35. ...But Yet to Catch Up With Levels in China

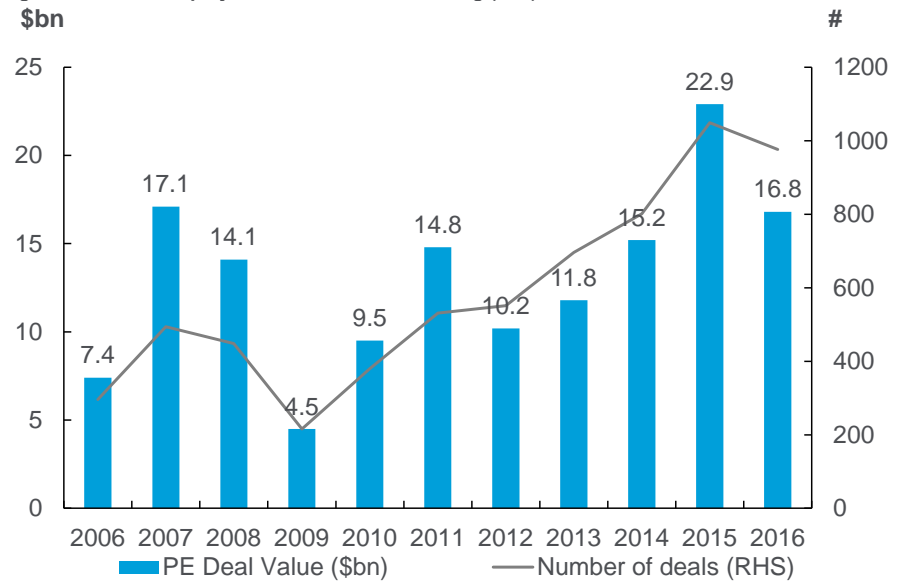


Source: UNCTAD, Citi Research

## Growth Capital – Private Equity/Other Asset Class

Private equity (PE) flows that provide growth capital in the early stage/disruptive technology sectors have also seen a meaningful pick up. As per the Bain Private Equity Report 2017, private equity deal value in India was about \$17 billion in 2016, slightly lower than the \$23 billion seen in 2015. The largest share of PE investments was concentrated in the banking and financial services, consumer technology, and IT sectors amounting to a 55% total share. The number of funds participating in India (including alternative investment funds, venture debt, and distressed asset funds) has almost doubled from 138 in 2013 to 253 in 2016, showing a widening investor base for different asset classes.

Figure 36. Private Equity Deal Flow Remains Strong (\$bn)

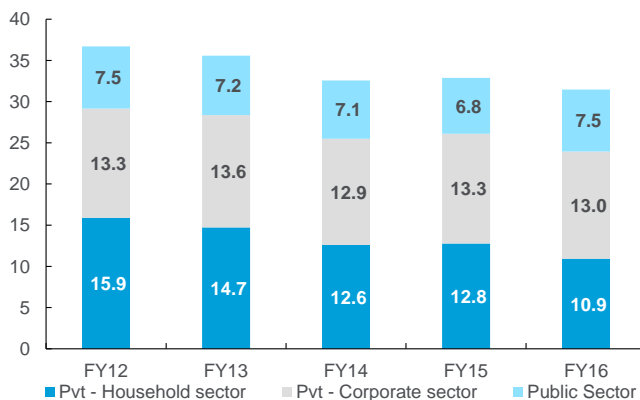


Source: Bain Private Equity Report, Citi Research

### Household Investments – Residential Real Estate Holds Key

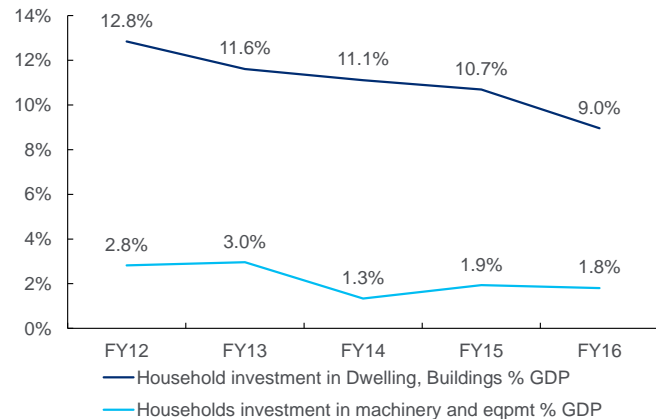
The share of household contribution to total investments (including small enterprises) has been one of the highest but has gone down in recent years. Household investments have declined from 15.9% of GDP in FY12 to 10.9% in FY16, even while private corporate investment (13.3% vs. 13%) and public investment (unchanged at 7.5%) have held on. Upon drilling down, we find that a substantial portion of the decline in household capex is due to a drop in investment in 'dwelling, other buildings and structure' – which could be a reflection of the challenging conditions in the residential real estate sector. In fact, this trend is also observed in household savings behavior where savings in physical assets have declined from 15.9% of GDP in FY12 to only 10.9% in FY16. That said, the government's efforts to help bring the housing sector back on track through affordable housing, rural housing, and real estate regulatory authority could help revive the household investments over the medium term.

Figure 37. Households Behind the Investment Decline %GDP



Source: CSO, CEIC, Citi Research

Figure 38. Most of Household Investment Decline Led by Real Estate %GDP



Source: CSO, CEIC, Citi Research

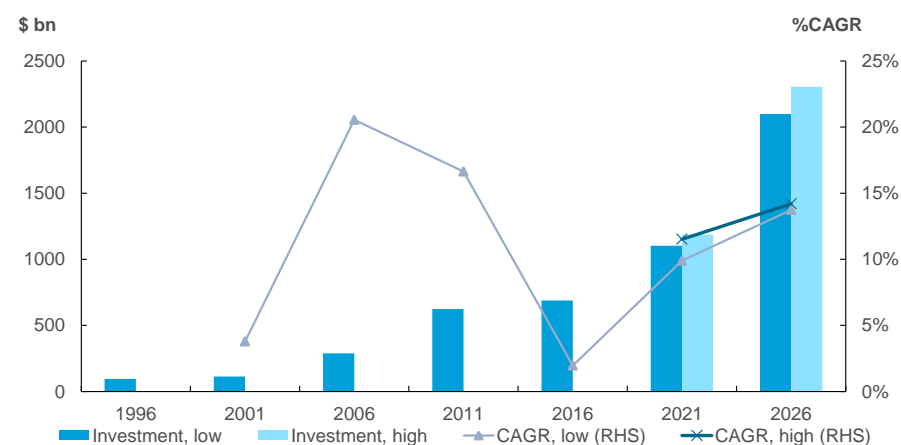
In the Indian context 'household' also includes smaller firms in the informal economy. The decline of household investment in machinery and equipment from 2.8% of GDP to 1.8% could be explained by the headwinds to the informal sector in these years.

## Double-Digit Investments Growth Achievable

The deep dive into investment drivers suggest that the catalysts for investment recovery are present across the private sector (corporate deleveraging, resolution of bank NPAs, favorable external environment, low and stable interest rate regime) as well as the public sector (fiscal reforms on the tax front, enhanced expenditure quality towards infrastructure, focus on ease of doing business at sub-national level) and also foreign direct investments (continued liberalization, macro stability). Encouraged by these findings, one could surmise that the investment growth, which slipped from 14.9% in the FY04-FY11 period to 3.4% in FY12-FY17, has the potential to rebound once again to 10%+ growth levels over the next 10 year horizon.

Our own assessment of a similar investment growth profile (10%+) pushes investments from around 30% of GDP in FY17 to 35% of GDP in FY27, which is still lower than the historical high of 39% of GDP achieved in FY12. In Figure 39, we also present an alternative high-investment growth scenario where the investment/GDP ratio is pushed up to 37%. In cumulative terms, the investments during the 5 year period of FY17-FY22 are likely to stand at \$5 trillion and in the subsequent 5 year period of FY22-FY27 could be \$9.6 trillion. This compares with the investment of \$3.4 trillion in the FY12-FY17 period. A significant chunk of the investment, at around 7% of GDP, will be into the infrastructure sector which could amount to close to \$1.1 trillion in the FY17-FY22 period and \$2.0 trillion in the FY22-FY27 period. This compares with around \$0.6 trillion investment in the infrastructure sector in the 12th Five Year Plan period, i.e., FY12-FY17.

Figure 39. The Alternative Investment Growth Scenarios



Source: CSO, CEIC, Citi Research



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## **Manufacturing: Identifying the Winners of Tomorrow**

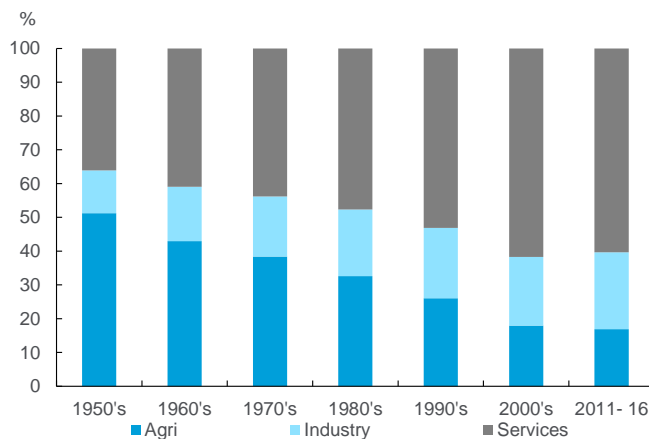
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## Manufacturing

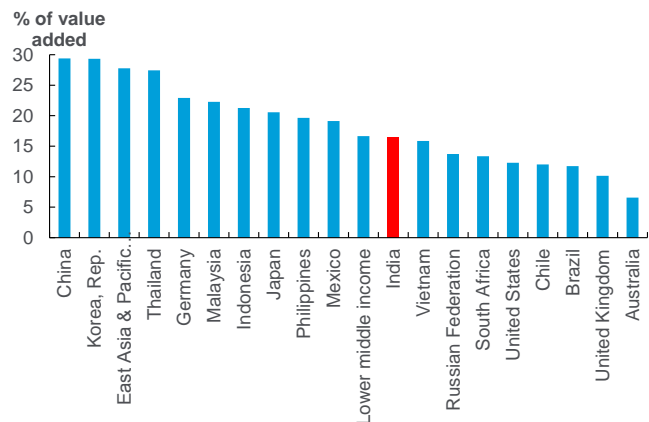
India skipped a step in its development process when it moved directly from being an agrarian economy to a service sector-oriented one, without going through a period of manufacturing focus. In fact from the 1980's onwards, most of the drop in agriculture's share of GDP has been reflected in a higher share for services rather than manufacturing. The share of manufacturing in GDP in India has stayed in a narrow range of 14-16% over the last 40 years. It broke out of this range only recently to 18% now<sup>4</sup>. Typically, for other countries, the share of manufacturing in both growth and employment has risen in the initial part of the development process while the share of services picked up only after per capita income has reached a particular threshold.

Figure 40. Skipping a Step – From Agriculture to Services Economy



Source: CSO, CEIC, Citi Research, % of GDP

Figure 41. Manufacturing Share Higher than Only Industrialized Countries



Source: World Bank, Citi Research

### De-Industrialization Started at a Low Level of Per Capita Income

Even at the state level, we find signs of wide regional divergence and early de-industrialization. Share of registered manufacturing in state-level value-added varies widely – even for the more prominent states it ranges from 2% to 20% of state GDP. The inequality among states has persisted as the poorer states have generally not grown faster to catch up with the richer states. More importantly, it appears that most of the states have already reached their peak level of industrialization at a very low level of per capita income of between \$1,000 and \$3,000 (2005 dollars, PPP). As the Economic Survey 2016-17 points out, Indonesia attained peak manufacturing share of 29% at a per capita GDP of \$5,800 and for Brazil the peak share was 31% with per capita GDP at \$7,100.

<sup>4</sup> This is likely because of an adjustment to the definition of “manufacturing” in the GDP data

**Figure 42. Indian States are Already Showing Signs of De-industrialization**

	Year in which registered manufacturing peaked	Share of registered manufacturing in value added at peak	NSDP per capita at peak (Rs)	GSDP per capita at peak (2005 \$ PPP)	Share of registered manufacturing in value added now
Gujarat	2011	22.7	52,291	5,357	20.5
Maharashtra	1986	18.9	15,864	1,400	13.5
Tamil Nadu	1990	18.1	15,454	1,417	13
Haryana	2003	17.3	32,869	3,309	12.5
Himachal Pradesh	2011	16.4	46,207	4,733	14.9
Karnataka	2008	14.7	34,752	3,523	12.5
Bihar	1999	13.6	9,215	905	1.4
Madhya Pradesh	2008	12.5	18,707	1,897	6.6
West Bengal	1982	12.3	9,348	909	4.9
Orissa	2009	12	22,779	2,353	10.6
All India	2008	10.7	30,483	3,091	10.6
Punjab	1995	10.5	25,995	2,506	10.4
Kerala	1989	10.3	14,418	1,322	3.3
Andhra Pradesh	1996	10	16,904	1,641	7.5
Uttar Pradesh	1996	10	11,679	1,134	6.5
Assam	1987	10	12,904	1,164	4.9
Delhi	1994	8.5	39,138	3,742	1.6
Rajasthan	2012	12.3	15,816	1,522	10.6

Note: NSDP is Net State Domestic Product and GSDP is Gross Domestic State Product

Source: Economic Survey 2016-17, CEIC, Citi Research

### Renewed Push on Manufacturing Under “Make in India”

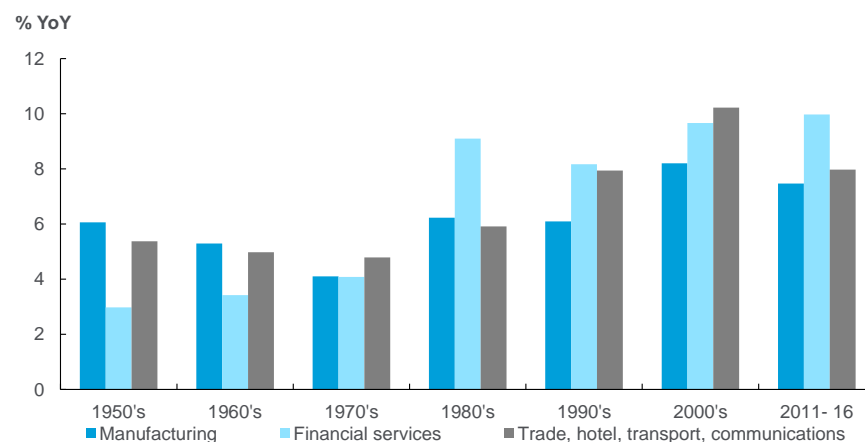
The lack of manufacturing development has been a constraint for higher investment, employment, and productivity improvement in India. Recognizing this, in September 2014, Prime Minister Narendra Modi reasserted India's ambition to raise the contribution of manufacturing-to-GDP to 25% by 2025, by making India a global manufacturing hub. Opening up the economy to more FDI inflows, easing the regulatory barriers, and infrastructure development have all been key components of the ‘Make in India’ strategy, with a particular focus on export-led growth.

## Developing a Framework to Understand What to Manufacture in India

### From Service Sector Leaders to Manufacturing Leaders

If India's share of manufacturing has to rise to 25% of GDP from the present level of 17-18% then the growth rate of manufacturing has to be much higher than the GDP growth over this period. A similar transformation has been observed in the past in financial services and trade, hotel, transport, and communication services – these sectors have grown at an average of 10% over almost two decades and their combined share in GDP has gone up to 41% from 32% in that time period. Sectors like IT/BPO, banking, and telecom have been the leaders of India's growth story in the recent past and if manufacturing has to lead the next phase of growth then India needs to find leaders within that sector urgently.

Figure 43. Manufacturing Growth has Lagged Leading Services in the Last Three Decades



Source: CSO, CEIC, Citi Research

## Characteristics of a Lead Sector in Manufacturing

### Size, Productivity, Employability and Exportability

In the Indian context, we think that a potential leading sector should demonstrate leadership in four different criteria — size, productivity, employability, and exportability. From the Annual Survey of Industries data (which covers all establishments with more than 10 workers) we collected information on different parameters for 14 industries and supplemented that with data from a few other sources. The parameters were then grouped under the four different criteria noted above and industries were ranked on each one of these parameters.

### Size Does Matter

We also employed four different parameters to judge the size of a particular industry — its **share in output, value added, profits, and investment**. It is not surprising that the capital-intensive industries generally score well in terms of scale parameters. The analysis also reveals that two industries — Basic Metals and Chemicals (including pharma, petroleum) — were consistently ranked in the top-3 on all these parameters. Food processing appears to be gaining in scale with both share in total output and investment reaching the top-3 but still lags a bit in profitability. The auto industry has also attained significant importance in terms of scale and a labor-intensive sector like textiles does well on most of the scale parameters except share in profits. Other labor intensive industries (i.e., apparel, leather, wood, and furniture) have generally been smaller in scale.

Figure 44. Ranking Industries on Scale Parameters

		Share in total value added	Share in profits	Share in total output	Share in total investment
Capital- intensive	Basic Metals	1	2	1	1
	Chemicals	2	1	3	3
	Electrical	8	7	8	8
	Mach & Equip	5	3	6	6
	Autos	3	4	4	4
	Paper	11	11	10	9
	Rubber & Plastic	7	6	7	7
	Food Products	4	5	2	2
Labor- intensive	Furniture	13	13	14	14
	Leather	12	14	11	11
	Textiles	6	9	5	5
	Tobacco	10	8	12	12
	Apparel	9	10	9	10
	Wood	14	12	13	13
		Top 3	4 to 7	8 to 11	Bottom 3

Source: ASI data, Citi Research

### Moving Up the Productivity Chain

It is important that the leading manufacturing sectors also become more productive. In fact, one can argue that the leading services sectors in the recent past (IT/BPO, financial services, and telecom) have all been highly productive. We considered five parameters to judge the productivity of an industry — **value added per worker, growth in value added, average number of workers per factory (firm), profits as a proportion of total investment, and R&D expenses**. As we mention in our discussion on formalization of the economy, larger firms (in terms of per firm employment) have higher productivity. This explains our choice of “average number of workers per factory (firm size)” as one of the productivity parameters, though we acknowledge that in some labor-intensive industries, higher number of workers per firm might not be an indicator of productivity. The R&D expenditure data (though a bit dated) is sourced from Department of Science and Technology.

**The leaders:** The two large industries — basic metals and chemicals — also demonstrate higher ranking in most of the productivity parameters. However profit ratio is relatively weak for basic metals given its high investment requirement and firm size is smaller in the chemicals industry. The auto industry is witnessing high labor productivity growth and has large firm size as well but we were surprised by the relatively low R&D expense. This might be because the R&D expenses of foreign auto manufactures are being primarily done in their home country while the assembly takes place in India. Productivity is also relatively higher in the machinery and equipment industry particularly with respect to R&D expenses and profitability. Not surprisingly, most of the capital-intensive industries demonstrate higher R&D expenses.

**The laggards:** Unfortunately almost all the labor-intensive industries are found to be less productive. Some of them have a large firm size (i.e., tobacco, apparel) which could only be a reflection of their labor intensity. On the other hand, apparel and wood demonstrate high growth in value added but we have to discount for the extremely low level of initial labor productivity for these industries.

Figure 45. Ranking Industries on Productivity Parameters

		Value added per worker	Growth in value added	Firm size	Profit/Total investment	R&D Expenses
Capital- intensive	Basic Metals	2	7	4	11	5
	Chemicals	1	12	8	3	2
	Electrical	5	5	7	4	3
	Mach & Equip	3	6	9	2	1
	Autos	4	1	1	9	12
	Paper	8	10	13	13	9
	Rubber & Plastic	6	4	11	6	7
	Food Production	9	11	10	10	4
	Furniture	7	14	12	7	14
Labor- intensive	Leather	14	8	6	14	11
	Textiles	12	9	5	12	10
	Tobacco	11	13	2	1	6
	Apparel	13	2	3	5	8
	Wood	10	3	14	8	13
		Top 3	4 to 7	8 to 11	Bottom 3	

Source: ASI data, Citi Research

### India Needs Job Creating Industries Too

Given India's demographic dividend and urgency to create jobs, the potential leading manufacturing sector should also be a large employer which provides decent income opportunities. In this context we created a ranking of the manufacturing industries on six parameters — **share in total employment, growth in employment, employment intensity of investment, employment elasticity to growth in that industry, average wages, and wage growth**.

Manufacturing of food products employs the maximum number of workers, closely followed by textiles. While both of these are labor-intensive industries, a capital-intensive industry like basic metals comes in as the third-largest employer. In fact, the metals industry also has the highest average wage per worker. However, in terms of employment growth, industries like autos, apparel, and electrical machinery have done well, but are still not the top employers by size of employment.

Employment intensity of investment (how many jobs are created by incremental investment) is also a critical parameter given the scarcity of capital resources in India. No surprises that the labor-intensive industries fare well in this parameter. On the other hand, employment elasticity to growth<sup>5</sup> (how many jobs are created when one unit of output growth happens in an industry) is relatively higher for capital-intensive sectors like auto, chemicals, and electrical. This creates an interesting conundrum for choosing the manufacturing leader from an employment perspective.

<sup>5</sup> We have used the employment elasticity calculated in Radhicka Kapoor – Waiting for jobs, ICRIER Working Paper no. 348, November 2017.

Figure 46. Ranking Industries on Employment Parameters

		Share in total employment	Growth in employment	Wages	Growth in wages	Employment intensity of investment	Employment elasticity to growth
Capital-intensive	Basic Metals	3	6	1	10	14	9
	Chemicals	6	12	6	12	13	2
	Electrical	9	3	8	5	7	1
	Mach & Equip	7	7	5	6	9	8
	Autos	5	1	3	2	11	3
	Paper	12	9	11	8	12	10
	Rubber & Plastic	8	5	9	3	8	4
	Food Production	1	11	4	11	10	12
Labor-intensive	Furniture	14	14	14	14	5	6
	Leather	11	4	10	4	3	7
	Textiles	2	10	2	9	6	14
	Tobacco	10	13	12	13	1	13
	Apparel	4	2	7	1	2	5
	Wood	13	8	13	7	4	11
		Top 3	4 to 7	8 to 11		Bottom 3	

Source: ASI Data, Citi Research

## Export Potential

Higher export potential of a particular manufacturing industry helps in achieving optimal scale of production and often accentuates productivity improvement through competition. To find possible leaders through their export potential, we ranked the manufacturing industries<sup>6</sup> on four parameters — **share in total exports, growth over the last seven years, export quality from the IMF database, and classification based on their RCA trends**.<sup>7</sup>

Labor-intensive exports like textiles and food production still dominate India's exports, though the share of chemicals is now the highest after including pharma and petroleum refined products. However, in recent times capital-intensive categories like machinery and transport equipment have shown relatively higher export growth.

Most of the labor-intensive industries can be categorized as "Classic" in terms of their RCA patterns – consistently displaying RCA values >1 indicating relative competitiveness. Even basic metals and chemicals can be termed as "Classic" because of comparative advantage in iron and steel, pharma, and petroleum refined products. On the other hand, engineering exports and transport equipment have had an RCA<1 for a long period.

Apart from these characteristics, we can also consider quality of exports from the IMF data. If India's export quality is between 10% and 15% lower than a peer group, we call it "Moderate", more than a 15% difference is classified as "Poor" while less than 10% can be called "High" quality. For chemicals, machinery, and transport equipment, Indian export quality is 12% lower than the median of a group of peer countries, although within chemicals there is quite a lot of divergence. Petroleum refining quality in India is better than the comparable group median but for pharma it is 14% lower. Unfortunately for most of the labor-intensive exports (clothing, footwear, textiles and leather) the gap with the median is still quite high at 14% to 16%.

<sup>6</sup> We have omitted a few industries where the export share is too low

<sup>7</sup> For more details on the RCA estimation, please refer to the section on Exports as an engine of growth

Chemicals including petrochemicals also could be a preferred sector because their integration with the Global Value Chains (GVC) is relatively much better. Otherwise for rest of the sectors the integration is quite poor compared to ASEAN or other East Asian countries.

Figure 47. Ranking Industries on Export Potential

	Share in total exports	Avg Growth in exports	Export quality	RCA - Classic, Emerging, Marginal
Basic Metals	5	5	Poor	Classic
Chemicals	1	8	Moderate to high	Classic
Electrical	9	10	Moderate	Marginal
Mach & equip	6	2	Moderate	Marginal
Autos	4	1	Moderate	Marginal
Food Production	3	4	Poor	Marginal
Leather	10	6	Moderate to high	Classic
Rubber & Plastic	8	3	Moderate	Classic
Textiles	2	7	Poor	Classic
Apparel	7	9	Moderate	Classic
	Top 3	4 to 7	8 to 11	Bottom 3

Source: UNCTAD, IMF, CEIC, Citi Research

## Conclusion

Based on our analysis, most of the labor-intensive industries, except food production (processing) and textiles, are too small to have a meaningful impact on overall manufacturing activity in the short term. Food processing is also the largest employer with decent wages but unfortunately scores poorly on most of the productivity parameters including export quality. In our view, a rapid modernization of this sector could be one of the ways of increasing its export potential as well as improve the employment elasticity-to-growth and investment in the sector. As per capita income grows, the domestic demand for processed food should also be on the rise making this industry a viable option of pushing manufacturing growth.

Textiles and apparels could be another candidate to spur manufacturing but again the quality considerations arise both from productivity as well as an exportability perspective.

Among the capital-intensive industries, chemicals including pharma and petrochemicals stand out as a promising candidate. The sector is reasonably large now with relatively better productivity parameters. However, employment elasticity of additional investment in the sector is low and hence might not be able to absorb a substantial amount of the burgeoning low-skilled workforce. Over the medium term, this should be one of the sectors to focus on to move up the value chain.

Our purpose of this analysis was to identify sectors within manufacturing where the limited fiscal resources could be deployed for the maximum benefit. We believe that if the “Make in India” program is to be a success, then this identification process would be essential given the paucity of resources. Also, if there are regulatory hurdles in the growth of these sectors, they need to be removed.

This analysis could be further extended to include service sectors as well as infrastructure and construction. As we demonstrate elsewhere, construction has a large labor absorption capacity while the exportability of Indian services has been a proven success in the past.



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# The Pillars of Productivity Improvement

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# Physical Infrastructure

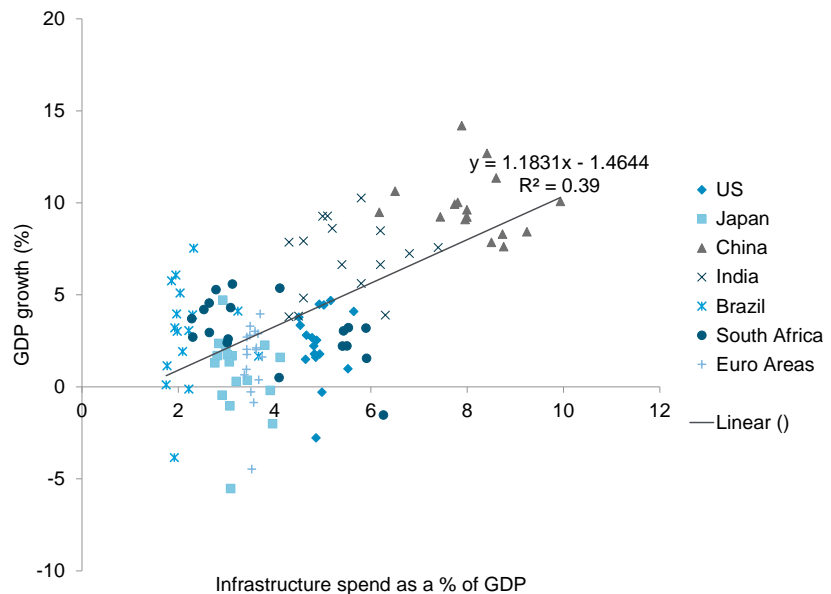
## The Linkage Between Growth and Infrastructure Spending

Infrastructure development helps support growth through both the “investment” and the “productivity” channels. An increase in investment spending on infrastructure leads to increased demand for goods and services, and to job creation both in building it, and potentially also in ‘operating’ the asset. The income/wages generated by the increased demand are then spent elsewhere, resulting in a so-called ‘fiscal multiplier’ effect.

On the other hand, an increase in productive capacity resulting from better roads, faster trains, bigger ports, more reliable power supplies, and broader wireless access could have a longer-term “supply side” effect on growth.

In our Citi GPS report [Infrastructure for Growth](#) we established a positive correlation between infrastructure investment and GDP growth with 15 years of data for a number of economies. We estimated that, on average, a 1% increase in infrastructure investment is associated with a 1.2% increase in GDP growth.

Figure 48. GDP Growth vs. Investment in Infrastructure

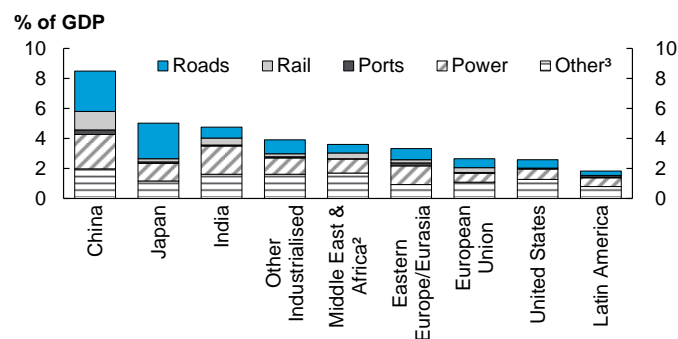


Source: OECD, Citi Research

### State of Infrastructure Spend in India

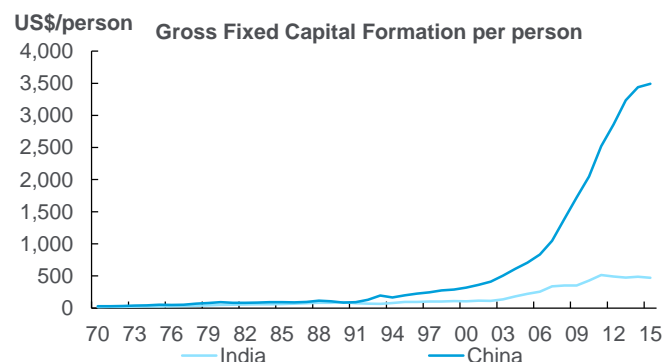
**The early years:** Over the years India has increased its infrastructure investment, though has spent less than other countries such as China (Figure 49). The per capita investment was similar for China and India up until the 1990s, however China’s increase was dramatic when compared to India’s following this period. On a population-adjusted basis, India would have needed to have spent \$2.3 trillion in fiscal year 2015 to match China’s per capita spend. On average from 1999-2011 India spent 4.75% of its GDP on infrastructure investment, while China during the same period spent 8.5%.

Figure 49. Average Spend on Infrastructure, 1999-2011



Note: <sup>1</sup> Other industrialized includes Australia, Canada, Croatia, Iceland, Lichtenstein, N Zealand, Norway, Singapore, S Korea, Switzerland, Taiwan, UAE. <sup>2</sup> Excludes high port and rail data for Nigeria. <sup>3</sup> Other includes Airport, Water & Telecommunications  
Source: OECD Economic Survey India (2014), Citi Research

Figure 50. The Evolution of Investment in China and India



Source: United Nations, India Central Statistics Office, China National Bureau of Statistics, Citi Research

**Recent trends:** In the 12th Five Year Plan (12th FYP) for the years FY13–FY17, the target was to increase infrastructure investment as a percent of GDP to 8.2% (from 7% in the 11th FYP), which would have entailed ~\$1 trillion investment over this five year period. However, the 12th FYP appraisal report prepared by the government think tank Niti Aayog estimates that only 67% of the target has been met, leaving the infrastructure investment-to-GDP ratio at ~5.8% for this period which is even lower than the 11th FYP.

### Headwinds to Infrastructure Spend

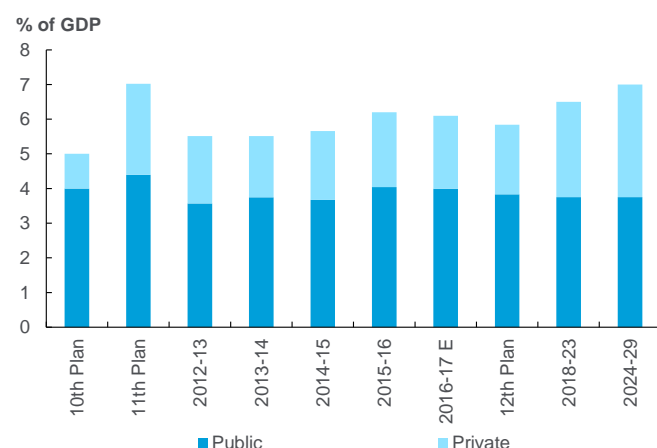
Three key factors that impacted India's infrastructure spending were the following: (1) stretched government finances for central and state governments; (2) onerous land acquisition laws; and (3) stringent environmental clearances. In fact, while output market reforms progressed well in India, efforts to reform the input markets were rather tardy. These factors led to delays and cost over-runs at different stages of project completion, thus impacting the viability/returns on existing and new investments. In addition, the availability of crucial inputs (coal, steel etc.) and high interest rates could also be considered as dampeners. In this cyclical downturn, the twin balance sheet problem of overleveraged infrastructure companies and banks struggling with NPAs, has also contributed to slow infrastructure spend.

### Estimating Future Infrastructure Spend

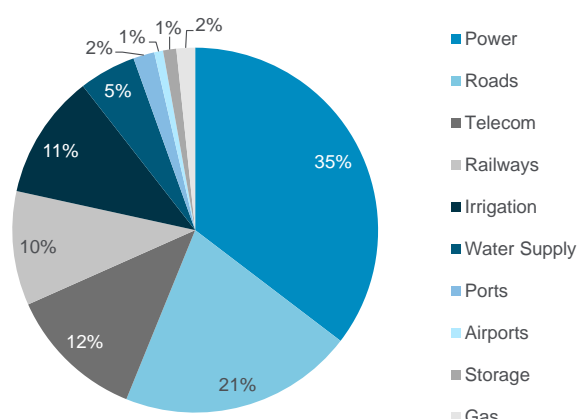
It is imperative that infrastructure development picks up over the next 10 years for India to sustain 8%+ GDP growth. We estimate that total infrastructure spend could be around \$3 trillion in the next 10 years if the infrastructure investment-to-GDP ratio has to be pushed up to 6.5-7%. This would imply that infrastructure investment would be on average 20% of total investment.

Infrastructure investment has been concentrated in a few sectors in the 12th FYP and interestingly the shares of different sectors have not changed much compared to the 11th FYP. Power, including renewable energy, had a share of 35%, similar to the share of transportation sectors (roads, railways, ports, airports). Telecom (12%) and Irrigation (11%) are other important sectors. Over the next 10 years, we expect the share of telecom to moderate as more focus would be on building a better transport infrastructure and the demand for power goes up due to easier access.

Figure 51. Private and Public Investments in Infrastructure



Source: Planning Commission India, Niti Aayog, Citi Research

Figure 52. Projected Sectorial Spend in 12<sup>th</sup> Five Year Plan

Source: Niti Aayog, Citi Research

## Financing the \$3 Trillion Infrastructure Opportunity

### The Split Between Public and Private Sector

Another important aspect is the financing of the \$3 trillion infrastructure opportunity. Although the 12th FYP envisaged that the share of the public sector would be brought down from 63% of infrastructure spend to 52%, in reality the ratio went up to 66% as the private sector could spend only half of what was planned. The public sector is likely to continue with its focus of building infrastructure and given the short-term headwinds to private sector infrastructure investments, we expect that it might take 10 years for the share of the private sector to increase to the original 12th FYP estimates (~48%). This would imply that the public sector spend on infrastructure could average about 3.7% of GDP in the next 10 years assuming that 12–15% of the budgetary allocations of the central and state governments are deployed towards infrastructure.

Figure 53. Infrastructure Investment Budgeted to Go Up by 21%YoY

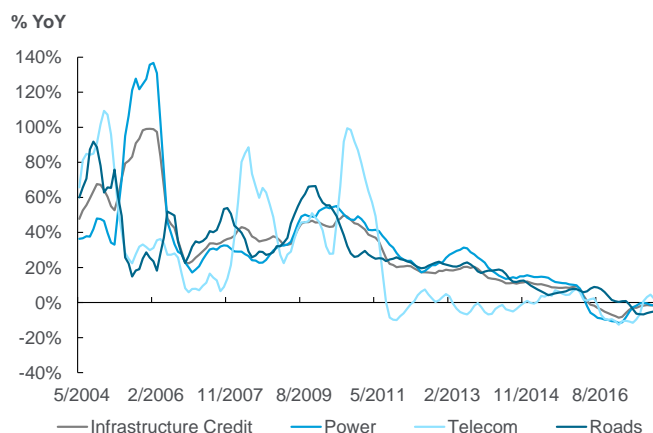
	FY18 BE (Rs Bn)			FY19 BE (Rs Bn)			Change over FY18 (Rs Bn)			Change FY18 %YoY		
	GBS	IEBR	TOTAL	GBS	IEBR	TOTAL	GBS	IEBR	TOTAL	GBS	IEBR	TOTAL
<b>HIGH FOCUS</b>												
Railways	400	800	1200	531	934	1465	131	134	265	33%	17%	22%
Affordable Housing (Urban)	60	0	60	65	250	315	5	250	255	8%		421%
Roads	509	593	1101	594	620	1214	86	27	113	17%	5%	10%
Telecom	38	98	135	45	170	215	7	72	79	20%	74%	59%
Digital India	14	0	14	31	57	88	16	57	73	115%		515%
Petroleum	15	873	889	37	892	929	21	19	40	140%	2%	5%
<b>MODERATE FOCUS</b>												
Civil Aviation	2	25	27	0	41	41	-2	15	14		61%	52%
Coal	0	145	145	0	158	158	0	13	13		9%	9%
Shipping	1	32	33	3	40	43	1	9	10	100%	28%	30%
Renewable energy	1	95	95	0	103	103	-1	9	8		9%	8%
<b>LOW FOCUS</b>												
Steel	0	114	114	0	113	113	0	-1	-1		-1%	-1%
Metro projects	178	15	193	149	19	168	-29	4	-25		28%	-13%
Power	9	643	652	13	535	548	4	-108	-104	47%	-17%	-16%
<b>TOTAL INFRA</b>	<b>1296</b>	<b>3648</b>	<b>4943</b>	<b>1572</b>	<b>4399</b>	<b>5971</b>	<b>277</b>	<b>752</b>	<b>1028</b>	<b>21%</b>	<b>21%</b>	<b>21%</b>

Source: Budget Documents, Citi Research, GBS – Gross Budgetary Support, IEBR – Internal and Extra Budgetary Resources

## Debt Funding Requirement – The Banking Channel

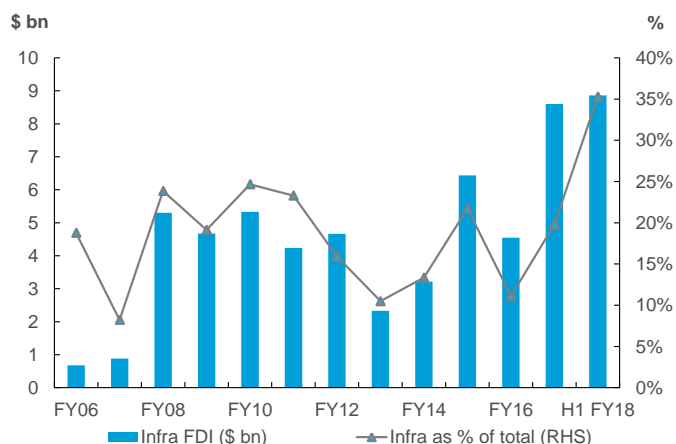
This could still leave about \$1.4 trillion to be invested by the private sector and if the debt-to-equity ratio for infrastructure projects is around 3:1 then the debt funding requirement could be \$1 trillion. As the recapitalization process of the banking system gathers steam and the non-performing asset cleanup happens through the new bankruptcy process, banks are likely to lead the debt financing of infrastructure with a share of ~36% (share of infrastructure in total bank credit could stay around 13–14%). This would only push up the bank credit-to-GDP ratio to 55% in 10 years, leaving ample room to grow even further.

Figure 54. Banking Lending to Infrastructure on the Decline



Source: RBI, CEIC, Citi Research

Figure 55. FDI in Infrastructure Picking Up



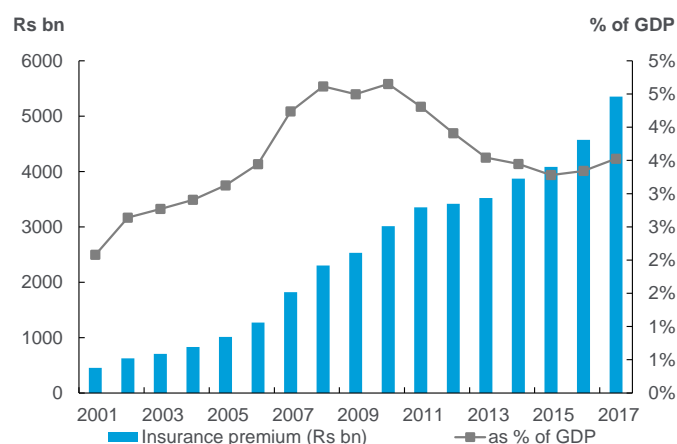
Source: RBI, CEIC, Citi Research

## Non-Banking Financial Companies and Insurance Companies

Public and private Infrastructure Non-Banking Financial Companies (NBFCs) like Power Finance Corporation, Rural Electrification Corporation etc. have also been contributing towards infrastructure funding. We expect them to contribute around 20% of the total debt financing requirement.

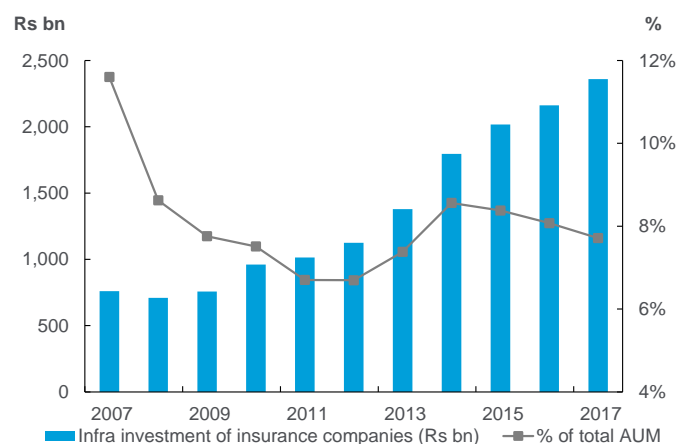
Insurance companies could be another provider of long-term infrastructure finance. Life insurance companies are mandated to invest 15% of their funds into infrastructure. With better insurance penetration, the insurance premium-to-GDP ratio could move up to 4.5% (vs. 3.3% now) and even with less than 10% allocated towards infrastructure, insurance companies infra funding could be ~\$160 billion over the next 10 years.

Figure 56. Trends in Insurance Premiums



Source: IRDA, CEIC, Citi Research

Figure 57. Infrastructure Investment by Insurance Companies



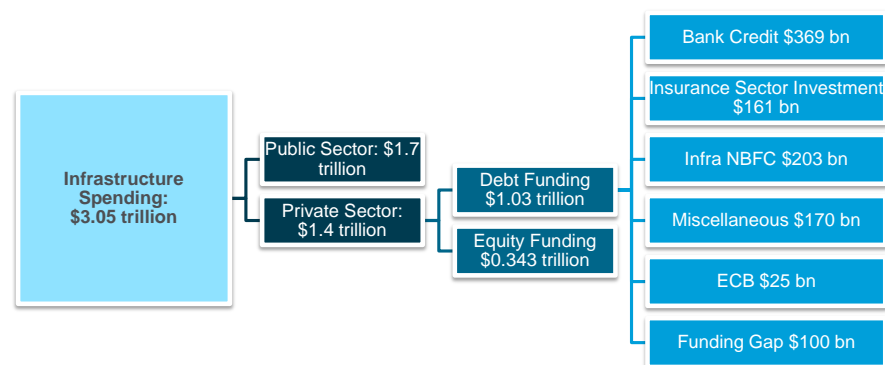
Source: IRDA, CEIC, Citi Research

Figure 58. Infrastructure Sector Investment and Financing over Next 10 years (Amount in \$ bn)

	FY18- FY22	FY23-FY27	Total
GDP	16,164	28,591	44,755
% of GDP in infra	6.50%	7.00%	6.82%
Total infra Investment	1,051	2,001	3,052
A. Funding by public sector	606	1072	1678
B. Funding requirement for private sector	445	929	1,374
B.1. Debt funding requirement	333	697	1,030
B.1.1. Bank credit	117	253	369
B.1.2. Insurance infra investment	45	116	161
B.1.3. Infra NBFC	64	139	203
B.1.4. Miscellaneous	45	125	170
B.1.5. ECB	10	15	25
B.1.6. Funding gap	53	49	102
B.2. Equity funding requirement	111	232	343

Source: Citi Research

Figure 59. Infrastructure Sector Investment and Financing over Next 10 years – Likely Composition



Note: NBFC = Non-banking financial companies

Source: Citi Research

### Foreign and Other Sources of Debt Funds

External commercial borrowing (ECB) by infrastructure companies has moderated in the recent past. In the absence of this avenue, new sources could be tapped. At some stage infrastructure companies should also be able to access the corporate bond market and even international investors can invest in these corporate bonds. Modes of financing like Infrastructure Investment Trusts (Invits), Infrastructure debt funds (IDF) and Masala bonds are slowly shaping up and could be important providers of infra financing.

With these sources of debt funds, the funding gap on the debt side is likely to be minimal – only 2–5% of the overall requirement. The critical assumption is that the bank lending towards infrastructure (which is presently declining) needs to be revived at the earliest. Without bank finance, the dependence on equity funding could increase substantially.

### Equity Funding of Infrastructure

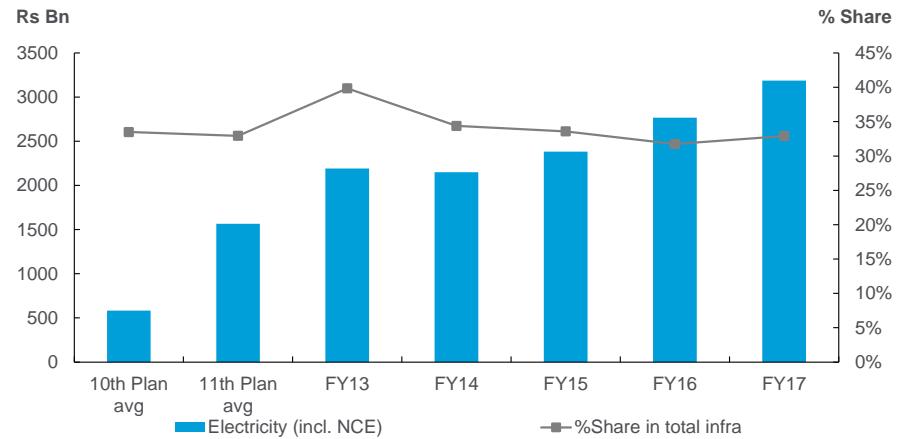
On the equity side, ~15% of the FDI in the last five years has come into infrastructure despite the challenging times. If India can maintain its attractiveness as an investment destination, then FDI inflows into infrastructure could be ~\$40 billion over the next five years. This should leave ~\$70 billion of equity capital to be raised through other modes like initial/follow-on public offerings (IPO/FPO), venture capital, private equity, and entities like the National Infrastructure Investment Fund (NIIF). Some part of equity investments could also come from long-term investors like insurance and pension funds and sovereign wealth funds.

Our analysis seems to suggest that infrastructure investments are unlikely to be constrained by funding requirements on either the debt or equity side once the near-term headwinds recede. The orderly execution, profitability, and demand for these infrastructure projects will determine whether infrastructure could again become a primary driver of investment growth.

## Power

Easy and affordable access to electricity is not only a basic human need but could also improve industrial productivity substantially. At the same time, the power sector is extremely important from an investment perspective as almost one-third of overall infrastructure investment happens in this sector.

**Figure 60. Power Infrastructure Makes Up Almost One Third of Overall Infrastructure Spend**

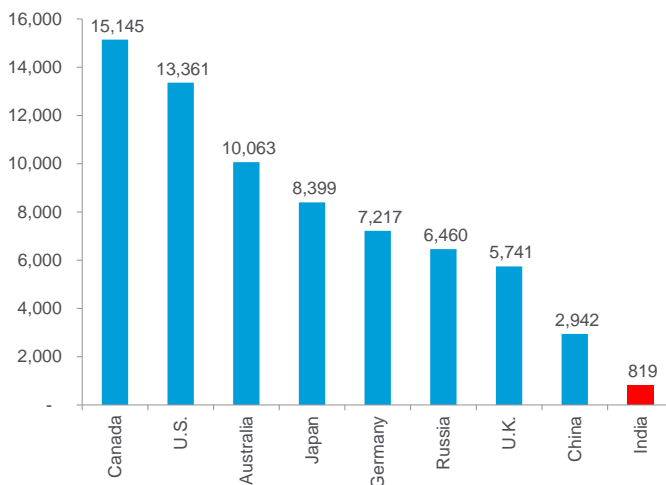


Source: Niti Aayog, Citi Research

## India's Per Capita Power Consumption is Among the Lowest in the World

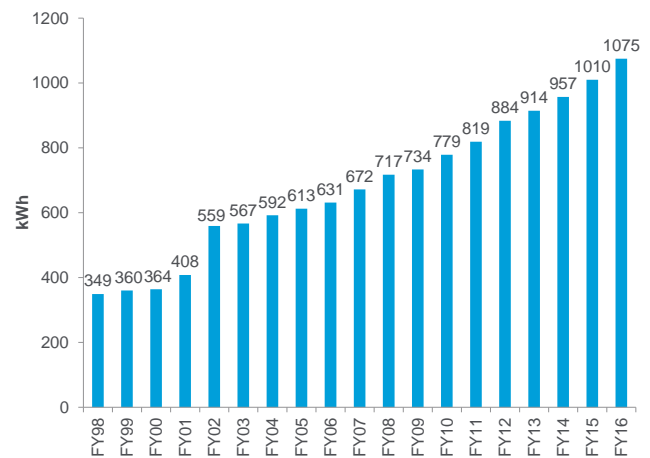
India's per capita power consumption was 1,075 kilowatt hour (kWh) in FY16 according to the Central Electricity Authority (CEA). This is much lower than per capita consumption in several other markets. In comparison, China currently has a per capita consumption of ~4,000 kWh, with developed nations averaging around 15,000 kWh per capita.

**Figure 61. Per Capita Power Consumption in India is Much Lower**



Source: World Bank, CEA, Citi Research, data for 2011

**Figure 62. ...Although It Is On a Rising Trend**



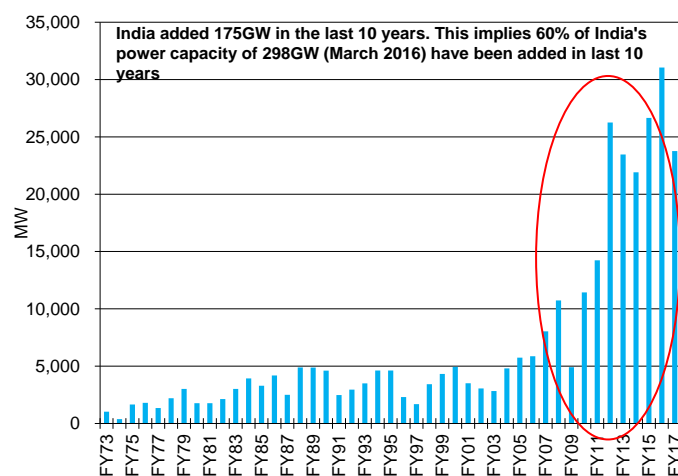
Source: Central Electricity Authority, Citi Research



## Massive Capacity Additions Have Translated to Historically Low Power Deficits

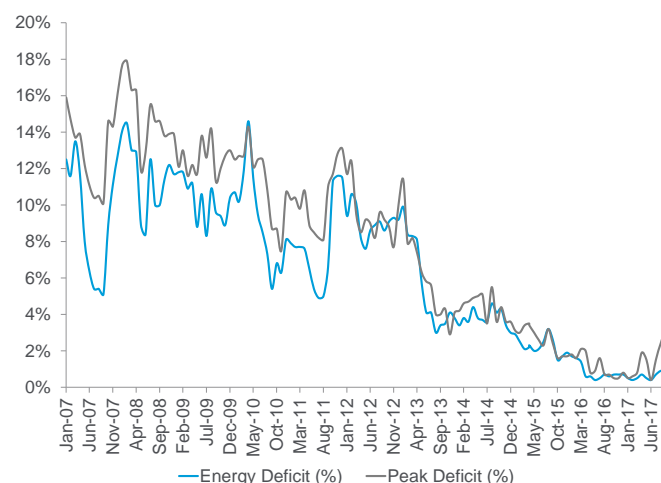
Driven by significant generation and transmission capacity additions, India's energy deficit has declined to under 1% in FY17 and touched a low of 0.35% in March 2017 versus highs of 11% in FY09. It is noteworthy that India has added ~200GW of capacity in the last 10 years, which is close of ~60% of FY17 capacity.

Figure 63. Massive Generation Capacity Additions...



Source: CEA, Citi Research

Figure 64. ...Have Led to a Decline in Deficits



Source: CEA, Citi Research

## But Several Households Still Do Not Have Access to Electricity

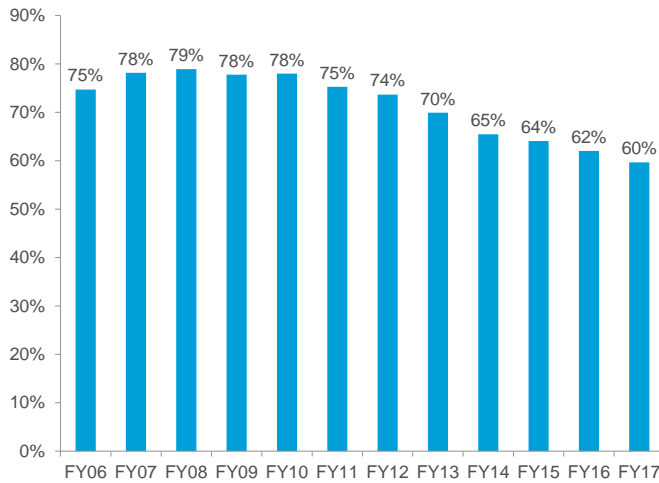
While reported power deficits in India have declined steeply, ~20% households or ~40 million households still do not have access to electricity. Against this backdrop the recent low power deficit of less than 1% appears understated.

The Government of India has plans to provide electricity connections to all households by March 31, 2019. In September 2017, it launched the 'Saubhagya' scheme with the objective to provide energy access to all remaining un-electrified households in rural as well as urban areas.

## Sharp Decline in PLF's Behind Tepid Investments in Generation

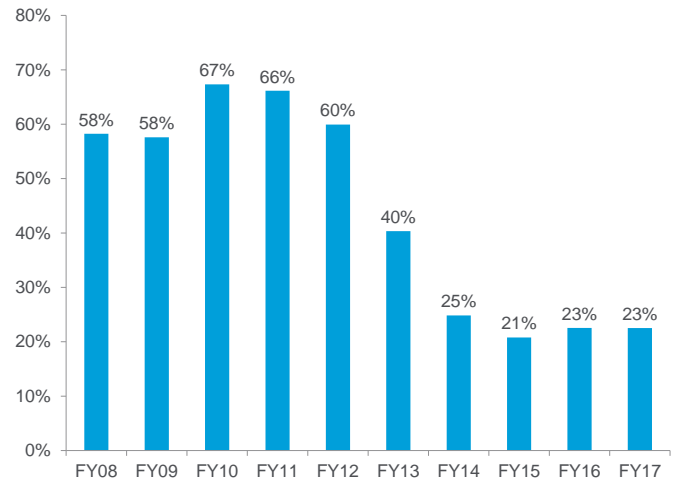
As the power deficit has declined in the last few years, the capacity utilization in power plants has also become critically low. The decline in gas-based plant load factors (PLF) from highs of 67% in FY10 to lows of 23% in FY17 can be squarely blamed on the scarcity of affordable gas for generation. However, the decline in coal-based PLF from highs of 79% in FY08 to lows of 60% is due to: (1) a lack of demand from state utilities; (2) tepid industrial activity; and (3) increasing energy efficiency. These low PLFs are leading to lack of further investment in thermal power generation.

Figure 65. India Coal Generation PLF



Source: CEA and Citi Research

Figure 66. India Gas Generation PLF

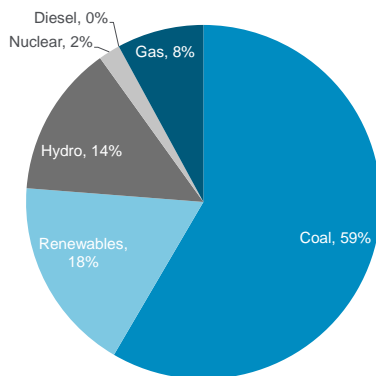


Source: CEA and Citi Research

### Incrementally, Government of India Has Been Pushing Renewables, Particularly Solar

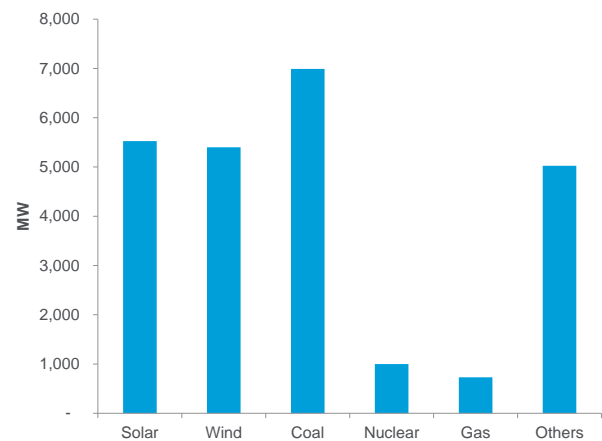
Currently, India is heavily dependent on coal for power generation — coal-based capacity has increased from 54% in FY07 to 60% in FY17. However renewables, led by solar capacity addition, which has strong government support, could crowd out other energy sources. The government has an ambitious target for solar additions (100GW by 2022 vs. 12GW currently). It also hopes to have 60 gigawatt (GW) of wind power capacity, 10GW of biomass and 5GW of small hydro capacities by 2022.

Figure 67. Current Capacity Mix Dominated by Coal, However...



Source: CEA, Citi Research

Figure 68. ...In FY17, Renewables Outpaced Coal in Capacity Additions



Source: CEA, Citi Research

### Distribution Sector Health – A Key Challenge...

While the Indian power sector has undergone a significant transformation in the last 10 years driven by large generation and transmission capacity additions, the financially stretched state-owned distribution companies (DISCOMs) which have been on a cost treadmill have been the weakest link in the Indian power sector. Without addressing the distribution issues, the productivity gains from nationwide electrification will not be fully utilized.

### ...Being Addressed Through the UDAY DISCOM Reforms

The Government of India launched UDAY DISCOM reforms in November 2015 to ensure a sustainable turnaround of DISCOMs and to allow them to break out of their debt traps. Bonds worth over Rs2.32 trillion (\$36bn) have been issued by states which should translate into interest cost savings. There has been steady operational progress on measures such as feeder metering, distribution transformer metering, and feeder auditing across several states. While results on AT&C (technical & commercial) loss reduction have been mixed, visible improvement in the liquidity situation at DISCOMs post the introduction of UDAY has resulted in faster payment cycles.

Further, generation companies have seen a reduction in the cost of generation, which is one of the biggest cost elements for DISCOMs. Measures such as rationalization of coal linkages have helped reduce transportation cost hence reducing the variable cost of power generation. There has also been an improvement in the quality of coal supplied to power plants, which helps reduce the amount of coal burnt for power production.

### Rising Power Demand to Open Up Investment Opportunities

As highlighted above, the Government of India targets to provide electricity connections to ~40 million un-electrified households by March 31, 2019. As per estimates from the Ministry of Power, considering an average load of 1 kilowatt (KW) per household and average uses of load for 8 hours in a day, there will be requirement of additional power of about 28,000 megawatts (MW) and additional energy of about 80,000 million units per year. Further, with income enhancement and habit of using electricity, the per capita demand for electricity may have further upside. We believe that this opens up significant investment opportunities in the power sector which in turn could aid productivity growth.

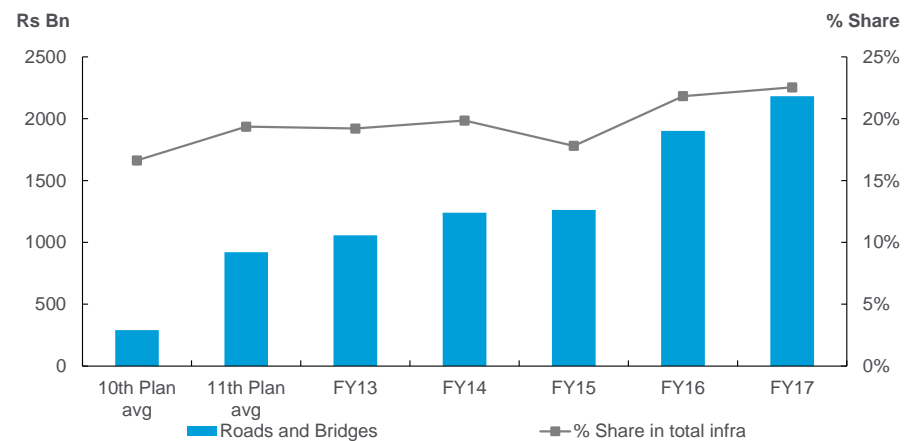
## Roads

### Roads Carry Over 60% of India's Freight and 90% of Passenger Traffic

Roads, the backbone of India, carry 65% of total freight and 80% of total passenger traffic. Further, it is noteworthy that while the National Highways are only 2% of India's total network, they carry 40% of the traffic.

In recent times, as private investment has been sluggish and public investment has tried to fill in the void, the importance of the roads sector has gone up substantially. More than 20% of all infrastructure investment happens in the road sector and central and state governments are responsible for ~75% of that investment.

**Figure 69. Public Investment has Tried to Fill the Void in the Road Sector**

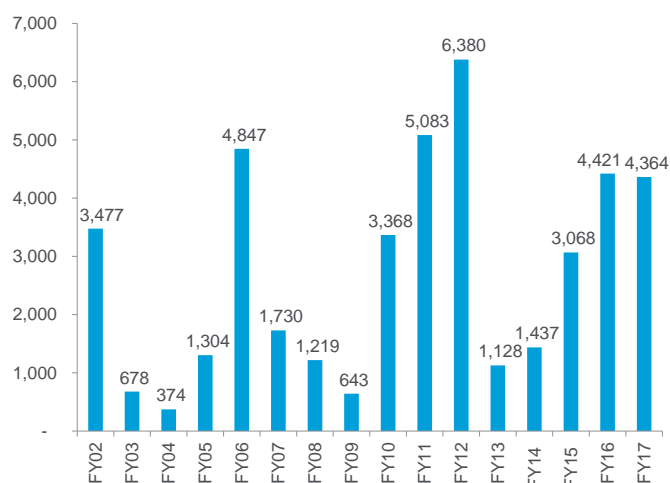


Source: Niti Aayog, Citi Research

Over the past four years (starting 2014), the pace of road construction and award by the National Highways Authority of India (NHAI) has improved sharply. In FY16/FY17, NHAI awarded ~4,400 kilometers (kms) of roads (per year) vs. <1,500kms awarded in FY13/FY14.

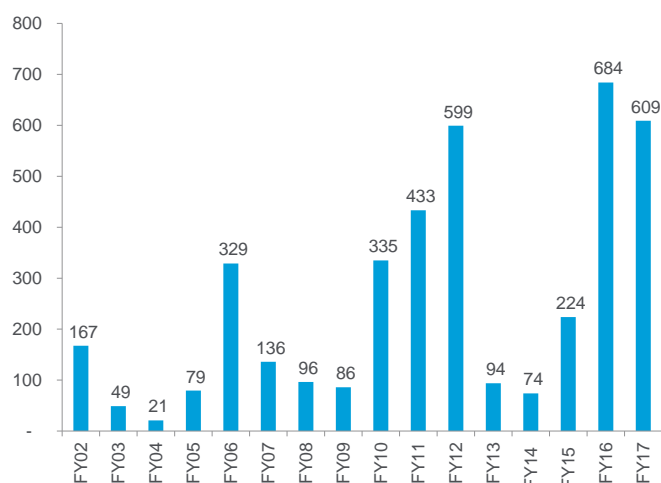
Similarly, the per-day pace of highway construction has improved to 25.2kms in the first quarter of FY18 from 12.1kms in FY15. The data shows consistent improvement over the past three years — 12.08kms in FY15, 16.60kms in FY16, 22.55kms in FY17, and 25.21kms in 1QFY18 (per day construction). However, with muted pace of NHAI road awards in FY17/FY18 construction activity in road sector could be impacted and the completion target of 3,500kms in FY18 might be difficult to achieve. On the positive side, awarding of roads seems to have gathered pace in the last few months.

Figure 70. NHAI – Length of Total projects Awarded (kms)



Source: NHAI, Citi Research

Figure 71. NHAI – Value of Total Projects Awarded (Rs bn)



Source: NHAI, Citi Research

## Gol Has an Ambitious Mega Development Plan

Appreciating the importance of road connectivity in spurring growth, the Government of India (GoI) in October 2017 unveiled an ambitious mega plan to develop 83,677km of roads at an investment of Rs6.92 trillion (\$108bn) over the next five years. Bharatmala Pariyojana (Bharatmala) is the biggest component of the plan.

### 34,800km of Roads to be Constructed Under Bharatmala

Under Bharatmala, 34,800km of roads will be constructed at an investment of Rs5.35 trillion (\$83bn). The road categories proposed in the project include: (1) 9,000km of economic corridors (aiming to strengthen links between manufacturing centers and demand centers/export hubs); (2) 6,000km of inter corridor and feeder routes; (3) 5,000km of National Corridors Efficiency Improvement roads for removing congestion from existing national highways; (4) 2,000km of border and international connectivity roads; (5) 800km of greenfield expressways; and (6) 10,000km of balance National Highway Development Program(NHDP) works.

### Funding for the Bharatmala Plan

For funding Bharatmala, (1) Rs2.09 trillion (\$32.5bn) will be raised as debt from the market; (2) Rs1.06 trillion (\$16.5bn) of private investments will be raised through public private partnerships (PPP); and (3) Rs2.19 trillion (\$34.1bn) will be provided from the Central Road Fund (CRF), Toll-Operate-Maintain-Transfer (ToT) monetization process, and NHAI's toll collections.

Figure 72. Bharatmala Funding (Rs trn)

Funding source	Amount
Debt markets	2.09
PPP	1.06
Central Road Fund, ToT monetization and NHAI toll collection	2.19

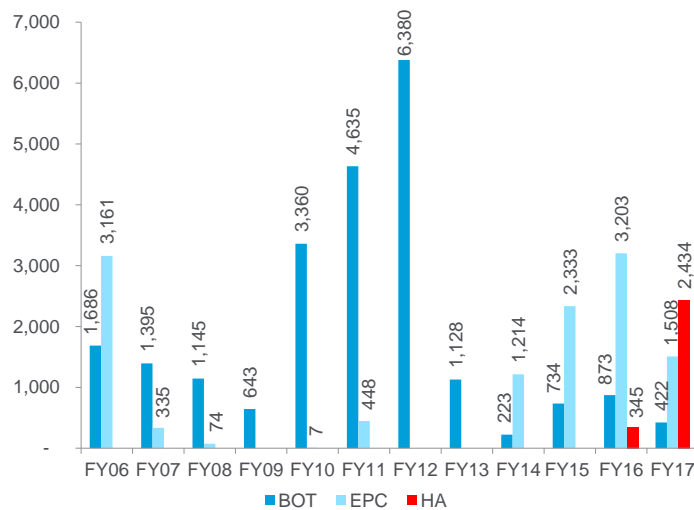
Source: MoRTH, Citi Research

Balance works of 48,877km of works under other schemes will be implemented in parallel by the National Highways Authority of India (NHAI) and the Ministry of Road Transport & Highways (MoRTH) with an outlay of Rs1.57 trillion (\$24.4bn).

### Key Policy Initiatives in Recent Years to Support Road Development

- **Hybrid Annuity Model (HAM) for highways sector:** As per the model, 40% the project cost is to be provided by the Government to the private developer during the construction period and the 60% balance will be provided as annuity payments over the operations period along with interest on the outstanding amount. The private party does not have to bear the traffic and inflation risks. The model has been successful in reviving PPPs in the sector which is evident in the interest being shown by the market for such projects.

Figure 73. NHAI – Increasing Pace of Hybrid Annuity Awards



Note: BOT = Build Operate & Transfer, EPC= Engineering, Procurement and Construction, HA = Hybrid Annuity  
Source: NHAI, Citi Research

- **Recycling of operational highway:** MoRTH has developed the Toll Operate Transfer (ToT) model for the monetization of operational highway assets. As per the Model, the right of collection of toll fees for operational public funded national highway projects is to be assigned for a pre-determined concession period (30 years) to concessionaires against upfront payment of a lump-sum amount. Recently under ToT, monetization of 82 operating highways with a private investment potential of Rs340 billion (\$5.3bn) has been taken up. The first bundle of nine national highway stretches of 680.64km has been put out to tender by NHAI with a potential monetization value of Rs63 billion (\$980m).

### NHAI Is Gearing Up To Award and Execute Faster But...

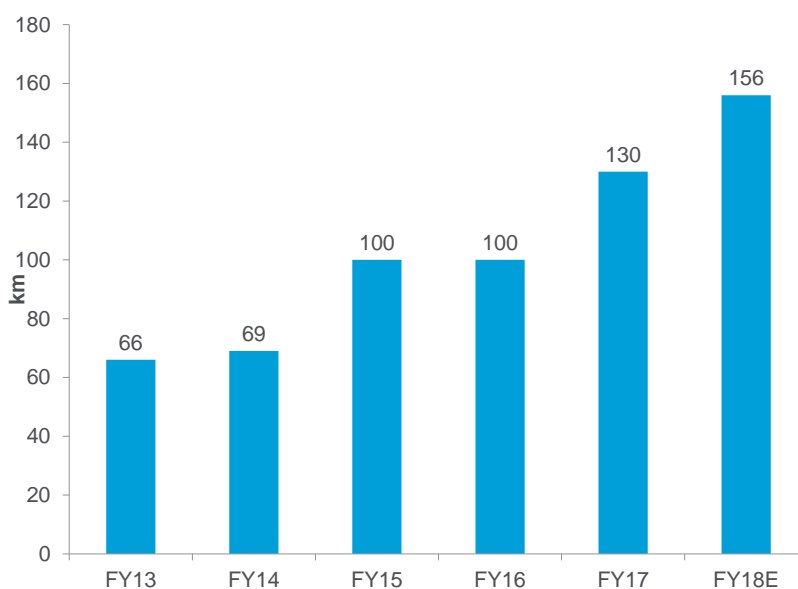
NHAI has been making efforts to increase the pace of awards and execution of road projects. While approving the “Bharatmala” scheme, the Government authorized the NHAI board to appraise and approve projects in EPC mode (engineering, procurement & construction) which should help expedite awards. While we remain hopeful that the renewed push by NHAI should result in increased pace of awards and execution, we do note that in the past, there have been repeated slippage of road award targets due to challenges associated with land acquisition, pre-development activity, and financial closure, which will continue to be watched out for.

## Last Mile Connectivity Through Rural Roads

While National Highways are extremely important for developing connectivity across a large nation, one needs to also focus on the last-mile connectivity in terms of rural roads to deliver the maximum productivity boost. The Prime Minister's Rural Road Scheme or Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in 2000 to provide all-weather access to unconnected villages in India. This program is funded by the federal government but managed by the state governments. Over 2000-15, the program had connected ~110,000 previously unconnected habitations, at a cumulative cost of ~\$40 billion.

The pace of rural road construction under the PMGSY accelerated in FY17 and is expected to maintain momentum in FY18/19E as the government plans to complete the project to provide road connectivity to all unconnected habitations by FY19.

**Figure 74. Rural Road Construction Pace Under PMGSY**



Note: Over 80% of sanctioned works in 2017-18 already complete as per rural dashboard

Source: PMGSY, Citi Research

## Improving Road Infrastructure to Have a Significant Impact

Going ahead, the impact of road development will materialize in the form of faster traffic flow on key corridors. For instance, the creation of 9,000km of economic corridors under Bharatmala will likely strengthen links between manufacturing centers and demand centers/export hubs. Further, other road development activities will lead to a significant reduction in congestion from existing national highways.

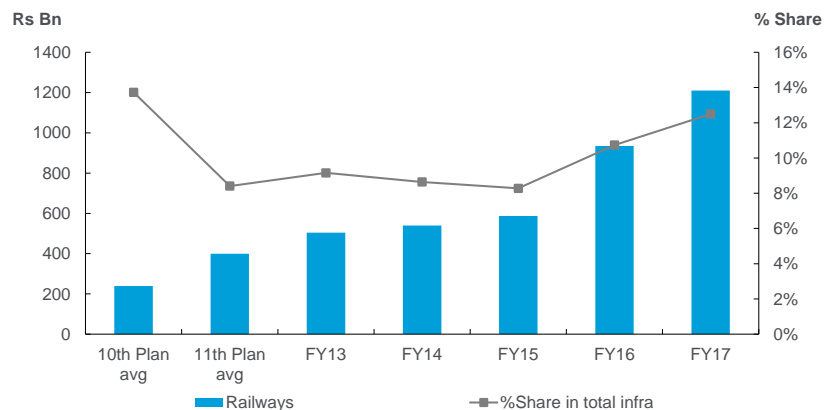
On the rural road front, several studies, have concluded that the road development: (1) contributed to an acceleration in consumption of perishable and manufactured goods in the connected habitations and (2) contributed significantly to providing improved access to non-agricultural job opportunities for residents. As per one study, a new rural road in India causes a 10% decrease in the share of workers in agriculture and an equivalent increase in wage labor. Other studies have demonstrated that the high transportation costs resulting from poor/unpaved connectivity of rural habitations to market centers restrict flow of goods and labor.

## Railways

India has the fourth-largest rail network in world (after the U.S., Russia, and China). Indian Railways runs ~21,000 trains a day (13,000 passenger trains, ~8,000 freight trains), carries 23 million passengers per day (equivalent to the population of Australia) and transports >1 billion tonnes of freight per year. As a result, Indian Railway's capacity creation, efficiency, profitability, and pricing of services impact not only the day-to-day life of citizens, but also the cost structure and profitability of industry. Given the size of its operations, Indian Railways has major bearing on the capital expenditure environment and GDP growth in the country.

The trend in investment in railways in different plan periods indicates that its share in total infrastructure investment fell to ~8% in the 11th Five Year Plan (FYP) and early part of the 12th FYP. However, under the Modi government, a renewed push on railways has propelled the ratio to 12%. If India targets to reach ~10% of GDP in infrastructure spend, then spend in railways should be more than 1% of GDP.

**Figure 75. Railways Has Been a Focus Area Under the Modi Government**



Source: Planning Commission, Niti Aayog, Citi Research

## Output of Indian Railways Impacts Other Sectors by 5x

Investment into Indian Railways has significant forward (sectors that use railway services as input) and backward (sectors that provide input to railways) linkages. The total benefits to other sectors from an increase in output of railway services can be to the tune of 5x. This multiplier effect has been increasing over time.

**Figure 76. Indian Railways: Backward and Forward Linkages**

	1993-94	1998-99	2003-04	2007-08
<b>Backward Linkage</b>				
Agriculture	0.01	0.01	0.01	0.02
Industry	0.63	0.76	0.93	2.04
Services	1.28	1.32	1.24	1.23
<b>Total Backward Linkage</b>	<b>1.92</b>	<b>2.09</b>	<b>2.18</b>	<b>3.29</b>
<b>Forward Linkage</b>				
Agriculture	0.13	0.12	0.16	0.07
Industry	2.15	2.03	2.11	1.18
Services	1.13	1.13	1.16	1.19
<b>Total Forward Linkage</b>	<b>3.41</b>	<b>3.28</b>	<b>3.43</b>	<b>2.44</b>

Source: Economic Survey, CSO, Citi Research



Assuming a factor of 5x of investment into railways, the secondary benefits could be 30-40% of GDP over the next five years if these investments are realized. It is clear that this size and scale of investment will kill many birds with one stone; it will not only substantially improve the quality of railway services and solve the problem of a lack of capital expenditure in the country, but it will also make Indian industry more competitive and will give a significant boost to GDP.

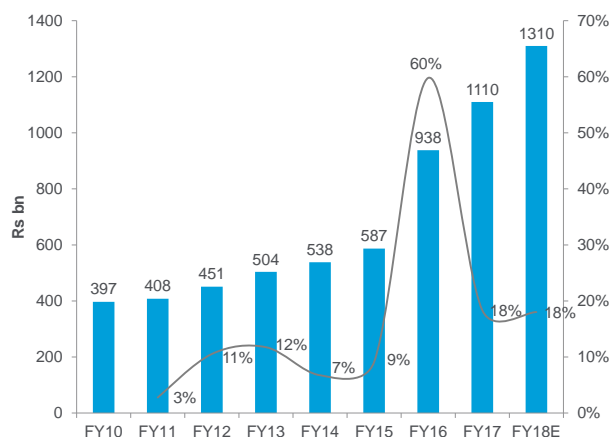
### Railways is Moving Towards Well-Defined Longer-Term Goal

Indian Railways is undergoing a paradigm shift. Capital expenditure is being ramped up, structural reform is being implemented, and large marquee projects are being rolled out, despite headwinds such as slow GDP growth and muted profitability.

Indian Railways has laid out an investment plan of Rs8.6 trillion (~\$140bn) over 2015 to 2019 to break the vicious cycle of historical under-investment, leading to lower revenues which further exacerbate the problem of underinvestment. In FY16-17, Indian Railways incurred capex of ~Rs2.1 trillion (\$32.7bn), ~25% of the overall target of Rs8.6 trillion (\$134bn) which may appear low but one should note that such initiatives take time to materialize. Further key capital expenditure initiatives like station redevelopment and a High Speed Rail corridor have yet to pick up.

- **Capital expenditure is being fast-tracked:** In FY17 capital expenditure was raised by as much as 106% vs. FY14 to Rs1,100 billion (\$17.3bn). Progress in physical commissioning has been equally strong. Commissioning of broad gauge lines/electrification rose 86%/58% in FY16-17 vs. FY09-14.
- **Structural reform gathering momentum:** Indian Railways is rolling out structural reforms to pave the way for longer-term growth. A modern accounting and cost management system is being introduced and should cover most of the railways over the next 2-3 years. Lack of accurate activity-specific cost data has led to inaccurate pricing and lack of private participation and funding for Indian Railways. An independent rail regulator has been set up to recommend rational tariffs, promote competition, and create a level-playing field.
- **Marquee projects rolling forward:** Marquee projects like DFC, station redevelopment, and construction of locomotive factories are under way. Even futuristic projects like High Speed Rail are now taking root, with the inauguration likely over the next few months.

Figure 77. Railway Capex Has Increased Sharply



Source: Citi Research, Indian Railways

Figure 78. Railway Capex Plan Going Forward

Railway Capex Plan (2015-2019)		
	Rs bn	\$ bn
Network Decongestion (incl. DFC)	1,993	32.4
Network expansion (incl. electrification)	1,930	31.4
National Projects (North Eastern and J&K connectivity)	390	6.3
Safety (track renewal, signaling, telecom)	1,270	20.7
IT and Research	50	0.8
Rolling Stock	1,020	16.6
Passenger amenities	125	2
High Speed Rail and elevated corridor	650	10.6
Station redevelopment and logistics parks	1,000	16.3
Others	132	2.1
<b>Total</b>	<b>8,560</b>	<b>139.2</b>

Source: Citi Research, Indian Railways

- **Increasing efficiencies and faster project execution:** Indian Railways has reduced the average project approval duration to six months now from an average of 24 months. It has also achieved 100% e-procurement and the entire supply-chain catering to procurement worth Rs250 billion (\$3.9bn) has been digitized. Efficiencies are also being increased through optimal fuel use.

### Funding Is Not an Issue

Indian Railways has tied up Rs1.5 trillion (\$23.6bn) funding from Life Insurance Corporation of India (LIC) over a five year period. This would be supplemented by Gross Budgetary Support (GBS) and internal generation also. The ability to conceive, plan, tender out, and execute projects on the ground is a bigger constraint. On this front, there appears to be decent progress, as evident in the recent commissioning of railway projects and speeding up of the decision-making process.

Figure 79. Indian Railways: Funding of proposed Capex of Rs8.6 Trillion

Source	Rs bn	% of Total
Gross Budgetary Support	2,560	30%
Internal Generation	1,000	12%
JVs	1,200	14%
PPP/Partnerships	1,300	15%
Debt	2,500	29%
- of which Rolling stock lease	1,000	12%
- of which Institutional Financing	1,500	18%
<b>Total</b>	<b>8,560</b>	<b>100%</b>

Source: Citi Research, Indian Railways

### Dedicated Freight Corridor (DFC) Promises to be a Game Changer

Dedicated Freight Corridor (DFC) promises to be a game changer for India's logistics and container train operator (CTO) industry. Under the DFC program, dedicated freight lines are being constructed along the eastern and western parts of India (total length of 3,360kms). The impact of the projects is far and wide — it will reduce logistics costs and kick-start formation of industrial zones across its length. Another four DFCs have been approved in January 2018 which will complete the Golden Quadrilateral Freight Corridor (GQFG) connecting the four Metro cities. Some of the key benefits of DFC include:

- **Substantial decline in operational costs:** Dedicated Freight Corridors propose to make substantial improvements in the existing carrying capacity by modifying design features which enable heavier loads at higher speeds. Simultaneously, in order to optimize productive use of the right of way, dimensions of the rolling stock are proposed to be enlarged. These improvements will likely enable longer and heavier trains to use the DFC.

According to DFC Corp of India Chairman's interviews, DFC will: (1) reduce operational costs by 40% and (2) reduce the time taken by freight trains to reach Mumbai from Delhi to 24 hours from 72 hours currently as it will increase the average freight train speed to 75kmph from 25kmph currently.

■ **Faster market access for various industries:** As per the Ministry of Railways,

- The Western DFC will mainly benefit export-import container traffic, besides petroleum, oils and lubricants, imported fertilizers and coal, foodgrains, cement, salt, and iron and steel.
- Traffic to benefit from the Eastern DFC will include coal for power plants in the northern region from coalfields in Bihar, Jharkhand, and Bengal; finished steel, food grains, and cement among others.

Figure 80. A Performance Scorecard for Indian Railways

Capex and Large Projects	3 Years Achievement	Comments
2015-2019 capex of Rs8.6 trillion	✓ ✓ ✓ ✓	Indian Railways has achieved ~25% of target
Physical commissioning	✓ ✓ ✓	Substantial improvement in physical commissioning (electrification/gauge conversion)
Station redevelopment	✓ ✓	Two stations have been awarded for redevelopment and 25+ stations are under award process
Rs400 billion orders for Locomotive factories	✓ ✓ ✓ ✓ ✓	Locomotive orders have been placed and factories are nearing completion
Dedicated Freight Corridor implementation	✓ ✓ ✓ ✓	Most of orders have been awarded, >35% of capex incurred, commissioning by 2019
Mumbai-Ahmedabad High Speed Rail	✓	Funding Japan close to finalization. Likely inauguration soon
Regulation and Reforms	Achieved	Comments
Setting up of Rail regulator	✓ ✓ ✓ ✓	Rail regulator has been established through an act of executive
Accounting reforms	✓ ✓ ✓	Under works. Roll out of accrual based accounting by 2019
Involvement of private sector	✓ ✓ ✓	Several initiatives to encourage private sector participation
Commercial Initiatives	Achieved	Comments
Rationalization of freight tariffs	✓ ✓ ✓	Freight tariffs have grown more slowly than passenger tariffs
Non-fare revenue mobilization	✓ ✓ ✓	Non-Fare revenue has grown 80% YoY to Rs100 billion
Focus on winning freight business	✓ ✓ ✓	Long-term tariff contract with large freight customers
Time-tabled freight trains	✓ ✓ ✓	On certain routes, Railways has started time-tabled freight trains
Easing of rules for freight transport	✓ ✓ ✓	Various initiatives to ease freight movement
Cost control / optimization	✓ ✓ ✓	Greater focus on cost has led to continuing surplus

Source: Indian Railways, Citi Research

### The Longer Term Plan for Railways

Indian Railways plan to invest \$310 billion over the next decade to convert 10,000kms of passenger and freight trunk routes to High Speed Rail Corridors. With the cargo traffic migrating towards DFCs, it will be possible to run High Speed passenger trains. The focus will also be on getting a higher share of powerful electric locomotives which will reduce dependence on fossil fuel. Given Indian Railways ability to carry large scale passengers and cargo traffic, it will serve a critical role in enabling mass mobility in India's path to higher growth.

## Ports and Inland Waterways

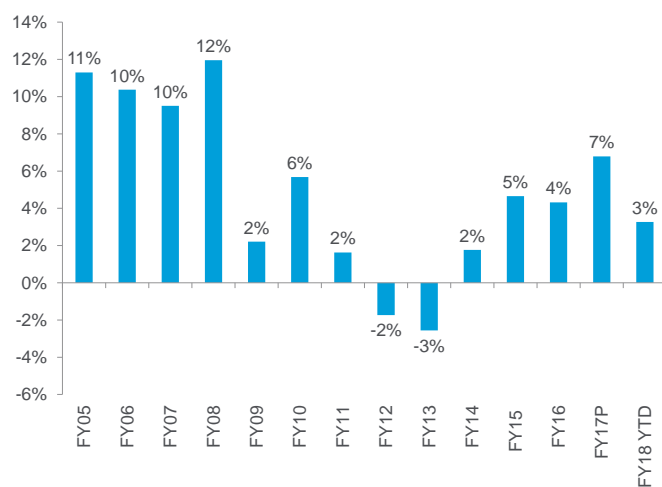
India has a coastline of 7,517km with 12 major ports and 200 notified non-major (minor/ intermediate) ports along the coast-line and Sea Islands. As of FY17, the major ports had a cargo capacity of ~1065 million ton (MT) while the non-major ports had a capacity of ~700 MT. India ports handle 90% (by volume) and 70% (by value) of India's external trade. Further, India has potentially navigable waterways of 14,500km.

### Regime Change is Taking Place in India's Ports

India's port landscape is undergoing a regime shift. The 12 government-owned major ports are creating substantial capacity, improving efficiency, increasing market share, and growing faster than non-major (mostly private) ports after a long gap.

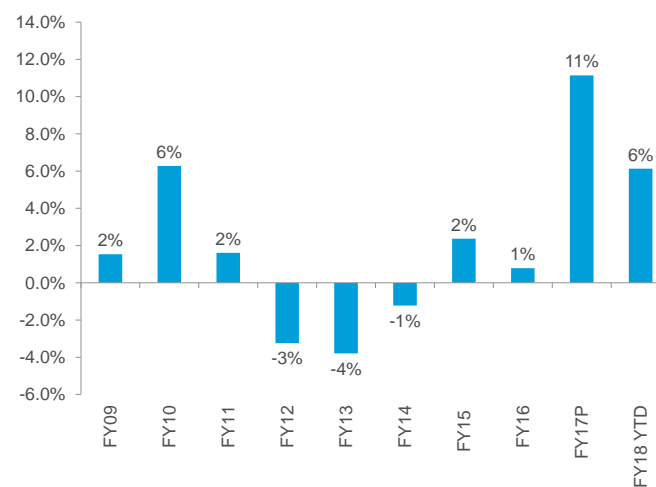
- **Major ports are growing faster and gaining market share since FY15:** Major ports cargo grew at 6.8% YoY in FY17 vs. growth of 1.8% for non-major ports in FY17. This is in sharp contrast to higher growth of non-major ports since 1991. As a result, market share of major ports reduced to 55% in FY15 from ~92% in FY1991. However due to faster growth, major ports have now increased market share to 58% in FY17 from 55% in FY15.
- **Substantial increase in capacity creation at major ports since FY13:** Major ports have added 375 MT per annum (mtpa) capacity over FY13-FY17 vs. 185mtpa over FY08-FY12, i.e., an increase of ~100% in pace of capacity addition. Further in FY17, all time high capacity commissioning of ~100mtpa took place.
- **Government's focus on EoDB initiatives seems to be bearing fruit:** The Government has rolled out Ease of Doing Business (EODB) measures at ports. This includes Direct Port Delivery (DPD), replacement of manual forms with e-filing, a reduction in charges for non-peak hours at ports, e-delivery/e-payment for shipping lines/agents, use of RFID tags for gate automation/tracking, integration of ports software with customs software, and improvement in evacuation infrastructure.

Figure 81. Major Ports Total Cargo Growth



Source: Indian Ports Association, Citi Research

Figure 82. Major Ports Total Cargo Growth ex Thermal Coal



Source: Indian Ports Association, Citi Research

## Sagarmala Program to Boost Port Infrastructure Further

Under the government's flagship Sagarmala program, 415 projects, at an estimated investment of approximately Rs8 trillion (\$124bn), have been identified across port modernization and new port development, port connectivity enhancement, port-linked industrialization, and coastal community development for phase wise implementation over the period 2015 to 2035. These projects are to be taken up by the relevant Central Ministries/Agencies and State Governments preferably through private/PPP mode.

### ...and Reduce Logistics Costs

The vision of Sagarmala is to "*reduce logistics cost for both domestic and EXIM cargo with minimal infrastructure investment*". Based on various studies, Sagarmala can potentially lead to the reduction of logistics costs for EXIM and domestic cargo resulting in cost savings of Rs350-400 billion (~\$5-6bn). The savings will be in the form of: (1) direct cost savings and (2) inventory-handling costs related savings resulting from reduced time (and reduced variability) in transportation of goods, particularly containers.

### Inland Waterways Also Hold A Significant Potential...

Inland waterways account for only 3% of India's total transport, compared with 47% in China and 44% in the European Union. Inland water transport is the most cost effective and economical mode of transport. One horse power can carry a 4000kg load in water whereas it can carry 150kg and 500kg by road and rail, respectively. As per World Bank studies, the cost of transport of one tonne of freight over one kilometer by road is Rs2.28, Rs1.41 by rail and Rs1.19 for waterways. Hence, logistics costs can be brought down considerably by transporting a larger amount of goods by waterways.

Given the significance as well as the huge potential that internal waterways hold, a total of *111 waterways have been declared as National Waterways* under the National Waterways Act, 2016. The Inland Waterways Authority of India (IWAI) has commenced the preparatory works on converting several of these into National Waterways by making them navigable. Initial development on under the "Jal Marg Vikas Project" and development of several multi-modal terminals has commenced across various locations.

### ...to Help Reduce Logistics Costs and Enhance Market Access

One of the first projects for inland waterway development is the "Jal Marg Vikas Project", under which the river stretch between Allahabad and Haldia is being developed to make it navigable for vessels with 1,500-2,000 tonne dead weight capacity (which is close to the carrying capacity of a goods train). Further, multi-modal terminals are being constructed at Varanasi, Haldia, and Sahibganj.

As per the Ministry of Shipping, once operational, the waterway will have linkages with the Eastern Dedicated Rail Freight Corridor and also with the region's existing network of highways, thus forming a part of a larger multi-modal transport network. The cargo from the Gangetic states of Bihar and Uttar Pradesh, some of which is currently transported to ports in western India will likely move to the Kolkata-Haldia complex, thus making the movement of freight more reliable with less logistical costs. Further, the waterway will also give wider market access for the agricultural produce of the Gangetic plain. The Possibility of all these positive developments makes us excited about the productivity enhancing potential of ports and inland waterways.

## Telecommunications

While roads, railways, ports, and inland waterways provide physical connectivity and improve productivity in the economy, telecom provides virtual connectivity which is equally important in the modern production and distribution context. In fact, telecom played a stellar role in India's rapid growth in the early part of the century by bringing a large nation together in a most cost-effective fashion.

### Rapid Spread of Telecom Usage Aiding Productivity Growth

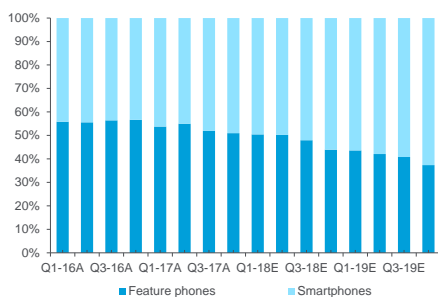
The Indian telecom sector is the second largest in the world by wireless subscriber base at ~1.2 billion and by Internet subscriber base at ~350 million (fixed and wireless). At ~80% mobile-share of web traffic (one of the highest in the world and vs 50% global average), India is also a uniquely mobile-first Internet country.

Since FY17, India's telecom sector has seen massive upheaval — a new aggressive player rolled out a pan-India 4G network and slashed tariffs (data tariffs declined >80% in 2017). The intense competition that followed has ushered a massive growth in voice and data usage levels (data consumption/user went from 1GB/month to >5 GB/month over 2017). Both data and voice usage in India are now among the highest in the world and India added broadband subscribers at a 10-15 million/month pace towards the end of 2017.

As per industry estimates, the Indian telecom sector provided direct and indirect employment to 4 million people in 2015. In India, telecom is leading the growth in Internet penetration owing to cheap/fast access to LTE services. International experience suggests that telecommunication services catalyze the growth of all sectors of economy, particularly, the fundamental sectors i.e., health, education, agriculture, digital services, and industry. The private sector wireless telecom infrastructure, combined with public digital platforms like Aadhaar-identity-based services together with a broader vision for Digital India imply gains from telecom could be higher in India. The bottom-of-the pyramid should gain the most from the virtuous cycle of growth fueled by telecommunication services.

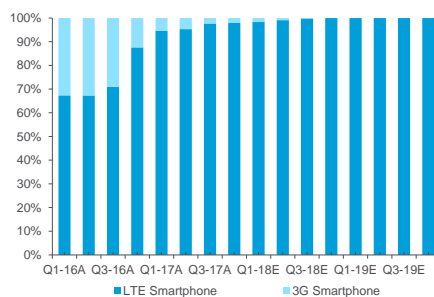
While data tariffs in India are now conducive to mass adoption, 4G smartphone prices remain high for a majority of Indian subscribers that are likely to remain voice-only feature phone users in the medium term — Citi Research forecasts ~30% of the telecom subscriber base to continue to remain voice-only and an expected 2x growth in data subscriber to ~700 million by 2023E.

**Figure 83. Rising Proportion of Smartphone shipments**



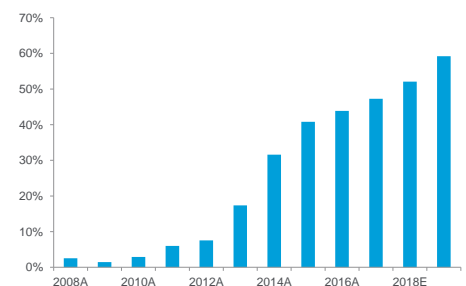
Source: IDC, Citi Research

**Figure 84. 4G Dominates Smartphones Shipments**



Source: IDC, Citi Research

**Figure 85. Smartphone Penetration**



Source: IDC, Citi Research

## The Vision of Digital India

While the private sector has focused on growing 4G adoption, the Government is focusing on driving rural connectivity. Apart from giving Internet access to the unconnected population, it would also be able to improve delivery of critical services like spread of literacy, health and information, and ties in well with the Jan Dhan initiative. In addition, there is also focus on domestic manufacturing of handsets as part of its “Make in India” program.

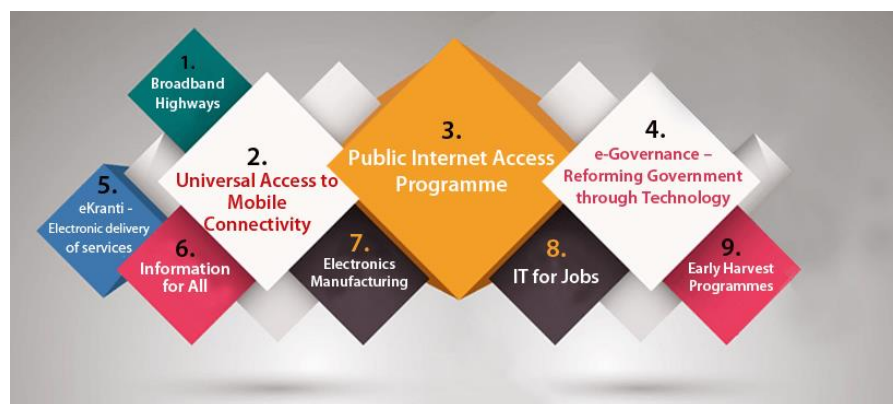
Digital India is an aggressive effort to wire-up India through broadband access across villages, building on high mobility access, public Wi-Fi hot-spots, electronics manufacturing, and IT-led improvement in delivery of Government services to both public and businesses. India witnessed a massive connectivity and efficiency step-up in the last decade on mobile telephony; the Digital India program aims to significantly build on it. Although only Rs130 billion (\$2bn) out of the total Digital India capital outlay of Rs1.13 trillion (\$18bn) is on new schemes, having the right vision, effective marketing strategy and a holistic approach should increase the chances of success in this endeavor.

Figure 86. Snapshot of Digital India

Digital India	
Social Impact	Information access - Government, private - empowerment
Economic impact	Efficiency, information, Government Services
Financial impact	\$1 broadband spend, \$5 gain
Businesses impacted	Telecoms, Tower cos, IT services, optical fiber manufacturers
Targets	100% smartphone penetration by 2019; broadband connectivity to 250K villages (50%); reduce electronic imports to 0 by 2020 (\$20b+ currently)
Govt spend	Rs1.13tn (Rs130b additional)
Challenges/ Risks	Execution risks, ecosystem for electronics manufacturing
Website	<a href="http://digitalindiamib.com/">http://digitalindiamib.com/</a>

Source: Gol, Media reports, Citi Research

Figure 87. Pillars of Digital India



Source: Ministry of Electronics & Information Technology, Government of India



We detail some of the important initiatives under Digital India.

### #1: Building the digital infrastructure

The BharatNet project aims to provide broadband connectivity to all gram panchayats (village bodies) in the country by using a mix of fiber, radio, and satellite media. The objective is to provide affordable broadband services in rural and remote areas, in partnership with states and the private sector. It is being implemented in 3 phases –

- **Phase I** – 100,000 gram panchayats are to be connected (by November 2017). Total spend was Rs180-190 billion (\$2.8-3bn) and was completed in Dec 2017.
- **Phase II** – Connectivity would be provided to the remaining 150,000 panchayats. It entails capex of ~Rs340 billion (\$5.3bn). The Government is hopeful of completing it by December 2018 though the timelines may be little aggressive in our view.
- **Phase III** – Future proofing of the Network to meet the requirements of Internet of Things (IoT) and 5G services era, to be completed by 2023.

### Impact on productivity and job creation

While digitization should have significant access benefits on the social front, most studies suggest a significant economic flow-through in productivity and job creation. We highlight a few such estimates:

- According to a World Bank study, a 10% increase in broadband penetration increased GDP growth by 1.4% in low-to-medium income countries.
- A McKinsey report estimates that bringing mobile broadband in the developing world to the levels of the industrial world could add \$400 billion annually to global GDP and create more than 10 million jobs.
- Every dollar invested in (fixed/ mobile) broadband infrastructure leads to a benefit of at-least \$5. Needless to say, the return of investment tends to be higher for increasing Internet penetration than from increasing the speed of the Internet.

### #2: Domestic Manufacturing of Electronics

There has been a big focus by the Government of India on domestic production of handsets. The bulk of the handsets sold in India are now locally made. Handset units locally produced grew to ~175 million units valued at Rs900 billion (\$14bn) in FY17, up from 110 million units valued at Rs540 billion (\$8.4bn) in the previous year.

To further promote depth in manufacturing of domestically manufactured handsets, a phased manufacturing program (PMP) was notified in April 2017 wherein through appropriate incentives (tax relief and other incentives) indigenous manufacturing of handsets would be promoted over period of time. The intention is to increase value addition within country over a period of time. To supplement this, the government has also increased the import duty on some mobile phone components in the FY19 budget to provide a fillip to domestic manufacturing.

**Figure 88. PMP Timelines for Manufacturing of Mobile Handsets Locally**

Year	Sub-Assembly
FY17	Charger/Adapter, Battery Pack, Wired Headset
FY18	Mechanics, Die cut Parts, Microphone and Receiver, Keypad and USB Cable
FY19	Printed Circuit Board Assembly (PCBA), Camera Module, Connectors
FY20	Display Assembly, Touch Panel/Cover Glass Assembly, Vibrator Motor/Ringer

Source: Ministry of Electronics and Information Technology



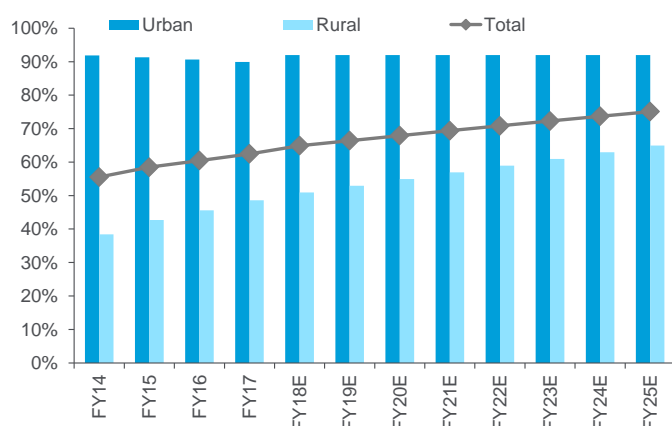
With the implementation of PMP, the value addition or share of indigenously procured components in the manufacturing of feature phones will go up from about 15% to 37% and the same for smartphones will move up from about 10% to 26%.

The government is also in the process of formulating the second phase of PMP which it expects will enhance value addition to 58.3% in feature phones and 39.6% in smartphones.

### Key Challenges

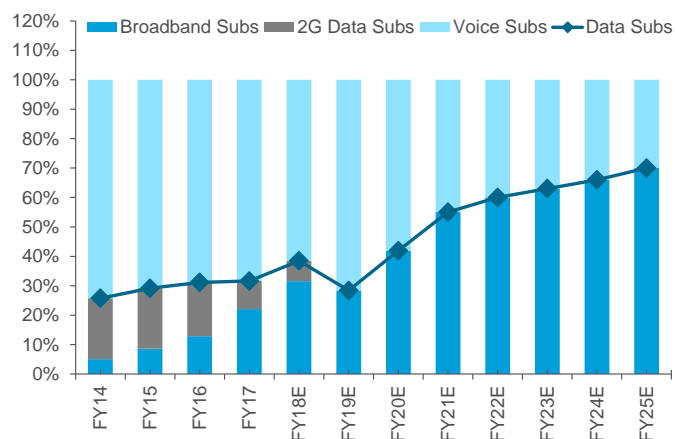
Operator profitability has come under severe stress due to a collapse in tariffs. This has cascaded down into leverage spiking up and forced operators to shut down, scale down, get acquired, or merge. We expect only a slow improvement in pricing over the near/medium term due to operators focus on market share. As such, the sector is likely to remain under stress over the coming few years. The subdued tariffs should however continue to drive up usage.

**Figure 89. Expect Rural Penetration to Rise to 65% by FY25E, Overall Penetration to Rise to 75% from ~62% Currently (based on unique subscribers)**



Source: TRAI, Citi Research Estimates

**Figure 90. Expect ARPUs to revert to FY15 Levels Only by FY22, Long-Term Growth of ARPU at India's Targeted Inflation Rate of 4%**



Source: TRAI, Citi Research Estimates

### Private Sector Infrastructure Likely to Sustain Notwithstanding Stresses

Operators in India believe they will achieve 90%+ 4G population coverage by FY19E. However, the level of usage and the continued growth anticipated implies that the telecoms would need to continue to invest in infrastructure and equipment to improve coverage and boost capacity. We expect operator investments to be spread across macro towers, small cells, fiber infrastructure, and state-of-the-art capacity boost equipment like massive MIMO etc. which can also expand network capacity multi-fold. India currently has close to 200 million 4G subscribers and 4-5GB/month usage. We estimate that this would go up to ~700 million 4G subs and 18GB/month usage by 2023E. Citi Research forecasts that over the next decade, capex investments at macro/micro towers sites would continue to rise.

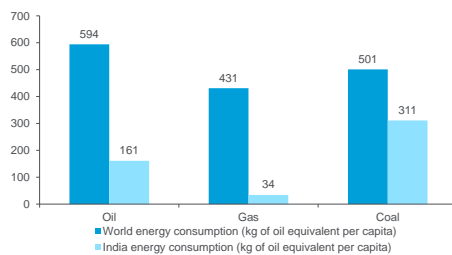
## Harnessing Resources

Balanced exploitation of natural resources is often key to a country's growth strategy. The process of harnessing these resources adds to investment growth, job creation and lower import dependence but at the same time the policymakers need to be mindful about the environmental consequences. In this report we talk about the state of affairs in four such resources – oil & gas, coal, iron & steel, and cement – and explain the policies around them. Also, we discuss the potential changes in these sectors as the country moves forward in its development path.

### Oil & Gas

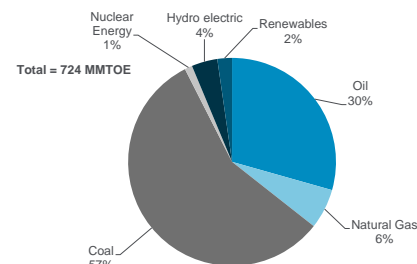
India's oil & gas sector has been marked by significant under-investment in areas that have material government/regulatory involvement or policy overhang, such as Exploration & Production (E&P), gas pipelines, and gas distribution. On the other hand, segments that are relatively 'free market', such as refining and liquefied natural gas (LNG) import terminals, have seen a more meaningful pick-up in investment activity over the last few years. This has led to the current situation where: (1) India's energy mix is heavily skewed towards coal and oil, with gas constituting a miniscule portion (Figure 92 and Figure 93); (2) India's energy import dependence has consistently been on the rise; and (3) diminishing air quality has been earning India dubious honors.

**Figure 91. Per Capita Energy Consumption in India and the World**



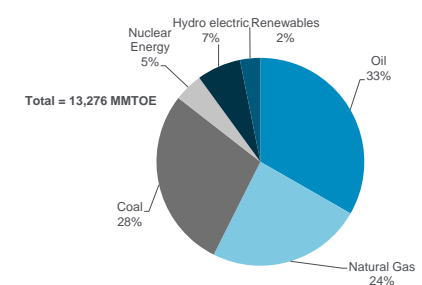
Source: BP Stat Review, World Bank, Citi Research

**Figure 92. India Energy Mix (2016)**



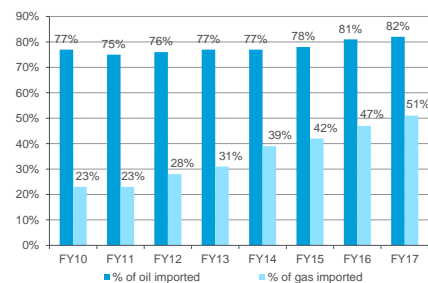
Source: BP Stat Review, Citi Research

**Figure 93. World Energy Mix (2016)**



Source: BP Stat Review, Citi Research

**Figure 94. India's Rising Oil & Gas Import Dependence**



Source: PPAC, MoPNG, Company reports, Citi Research

### Large Potential in Oil and Gas Underutilized Till Now

Despite India's large resource potential of ~28,085 million tons (MMT) of oil & gas, only ~40% of these resources have been converted to in-place reserves (Figure 95), with the conversion rate of in-place-to-proved reserves being just ~15%. In the past, India has missed on the targets for enhancing domestic production and has thus seen a rise in its import dependency in order to cater to rising oil demand (7% 3-year compound annual growth rate). In the gas space, despite a higher proved reserve base of ~1,100 million ton of oil equivalent (MMToe), gas production has been significantly low, due to a poor policy environment, lack of pricing freedom, and marketing incentives to monetize discoveries. Further, private sector and foreign participation in the E&P sector has also dwindled, as indicated by the high degree of relinquishments (Figure 96).

**Figure 95. India's Oil & Gas Resource Base, Reserves, and Consumption**

<b>Total resource potential (MMToe)</b>	<b>28,085</b>
<b>Total in-place reserves (MMToe)</b>	<b>11,241</b>
<b>Oil</b>	
In-place reserves (MMT)	7,087
Proved reserves (MMT)	621
India's consumption (MMT)	202
<b>Gas</b>	
In-place reserves (MMToe)	4,154
Proved reserves (MMToe)	1,104
India's consumption (MMToe)	45

Source: MoPNG, Citi Research

**Figure 96. Relinquishment of Blocks Awarded Under PSC Regime**

Bidding Round	Operational	PEL Awaited	Under Relinquished	Relinquished	Total
Field	26	-	-	2	28
Pre-NELP	12	-	3	13	28
NELP I	4	-	2	18	24
NELP II	4	-	1	18	23
NELP III	4	-	4	15	23
NELP IV	4	-	5	11	20
NELP V	6	-	3	11	20
NELP VI	12	-	15	25	52
NELP VII	14	-	9	18	41
NELP VIII	14	2	11	5	32
NELP IX	12	5	-	2	19
<b>Total</b>	<b>112</b>	<b>7</b>	<b>53</b>	<b>138</b>	<b>310</b>

Source: MoPNG, Citi Research

While coal and oil will likely remain the primary sources of energy in India for the foreseeable future, the government has conveyed its intention to increase the usage of gas in the country. However, in this regard, previous targets for enhancing gas consumption, as laid out by the Petroleum & Natural Gas Regulatory Board (PNGRB) in its Vision 2030 document released in 2013, have seen big disappointments. This, in turn, has impacted the development of city gas distribution (CGD) networks in the country and India's overall gas market has faltered.

However, the story is not quite the same in the other areas such as refining, where lack of government intervention made the sector an attractive investment opportunity, and fuel marketing, where rising vehicle demand, improving road infrastructure, and successful pricing liberalization catalyzed the creation of an extensive fuel retailing network.

### The Policy Regime is Reforming

Despite the admitted lull in certain parts of the sector, things are changing for the better, with the government having undertaken a slew of reforms across the oil & gas value chain, some of which have already borne results.

#### 1. E&P Reforms: GOAL: To Reduce India's Energy Dependence; STATUS: Work-in Progress, but Long Gestation

Figure 97. E&amp;P Reforms and Progress So Far

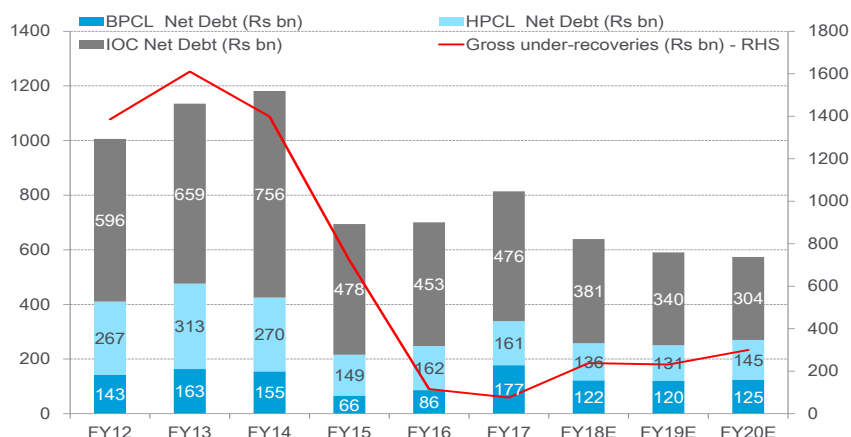
S.No	Reforms	Progress
1	<u>HELP</u> : Formulation of the Hydrocarbon Exploration & Licensing Policy in March 2016. Key features include: (1) uniform license for all hydrocarbons (oil, gas, shale, CBM); (2) open acreage policy; (3) switch from profit to revenue sharing; and (4) full marketing & pricing freedom.	The Discovered Small Fields (DSFs) bid round 1 was conducted in February 2017, wherein 31 contracts were signed. A second round is expected to be conducted soon. Additionally, round 1 of the OALP bidding mechanism under the HELP took place in Jan'18, with the awarding of blocks expected to take place by Jun'18.
2	<u>PSC-related reforms</u> : Extension of production sharing contracts to the economic life of assets	The gov't granted approval for extension to the PSCs of 28 existing small and medium-sized discovered fields plus the pre-NELP blocks.
3	<u>CBM policy</u> : The gov't granted approval for pricing & marketing freedom to E&P companies for gas produced from coal-bed methane blocks.	Reliance Industries, which has 2 CBM blocks in M.P., started commercial production from one of them. Production is at c0.7 mmscmd currently, which should ramp up to ~2-3 mmscmd in 18-24 months.
4	<u>Gas pricing reforms</u> : The government formulated a differential gas pricing policy, wherein the APM gas price for legacy fields is based on the volume-weighted average of the four global benchmarks (HH, AC, NBP, and Russia), while gas produced from deep/ultra-deep water & high pressure-high temperature areas will attract a premium price subject to a cap linked to alternative fuels (incl. LNG). The prices for both will be trailing 12-month averages with a one-quarter lag, to be revised semi-annually.	Reliance Industries & BP announced fresh capex of ~\$6bn towards the phased development of deepwater gas discoveries in the KG-D6 block, viz. R-series, satellite fields, and MJ-1. R-series (in KG-D6) is expected to commence production in 2020, followed by MJ-1 & satellite/other satellite fields in 2021-22. Bid evaluation for long-lead items for R-series is under way, while field development plans for MJ-1 & satellite/other satellites to be submitted in 2H FY18. Peak production expected at ~32 mmscmd. ONGC expects the first gas production by June 2019 from its deepwater KG basin field.
5	<u>EOR incentives</u> : The DGH's recent Enhanced Oil Recovery incentive policy calls for a 50% waiver of cess from crude oil produced from a well of an approved EOR/unconventional oil production project and an incentive equivalent to 10% of gas wellhead price on the gross production of gas from a well of an approved EGR / unconventional gas production project (capped at \$0.6/mmbtu for offshore fields, \$0.3/mmbtu for onshore fields).	Benefits to be seen over the next few years
6	<u>Coal-to-gas</u> : The gov't proposed to set up India's first coal-to-gas conversion plant in Orissa, thus enabling the generation of synthetic gas which is expected to be cheaper than natural gas.	Under discussion
7	<u>Shale</u> : The government is proposing to make amendments to the current shale policy which is in place only for SOEs, to allow private players to exploit the shale reserves in the oil and gas blocks as well. Both will be applicable for a period of 10 years.	Under discussion
8	<u>Production enhancement</u> : The government is planning to introduce a Production Enhancement Contract policy for nomination fields operated by the national oil companies (NOCs), by encouraging private investments, infusion of superior technology, etc.	Under discussion

Source: DGH, MoPNG, Press reports, Citi Research

## 2. Downstream reforms: GOAL: To reduce fuel subsidies and promote competition; STATUS: Successfully implemented

The downstream sector has benefited from the liberalization of gasoline and diesel prices in 2010 and 2014, respectively, post which the oil marketing companies have been earning improved margins on marketing of these fuels. The sector also saw a transition to cash transfers of subsidy with the launch of the Direct Benefit Transfer Scheme (DBTL) for cooking gas in January 2015. All these have resulted in a significant reduction in fuel subsidies and a material fall in the oil marketing company's' debt levels (Figure 98) which should create capacity for investment in this sector.

Figure 98. OMCs Debt Levels Have Been Falling



Source: Company Reports, Citi Research

### 3. Gas Reforms: GOAL: To move India towards a gas-based economy; STATUS: Pick-up in activity visible

With the increasing focus being placed on gas due to its status as a "clean" fuel, this sector has been receiving a fair bit of attention of late with the government setting a target of increasing the share of gas in India's total energy mix to 15% by 2030 vs. 6.5% currently. In order to achieve this, the government, together with the gas regulator (PNGRB) has announced various steps:

- Setting a target to increase the current pipeline network of ~16,000kms, which is grossly inadequate for a nation of India's size, by an additional ~15,000kms.
- Improving the gas transmission tariff framework to incentivize more pipeline developments (new unified tariff model being examined).
- Improving the model adopted for award of city gas licenses to attract serious participants and revive investments in the sector (new norms recently proposed).
- Part-funding of pipeline projects by the government (only one has been approved so far, i.e., GAIL's eastern India pipeline, which is being ~40% funded by the government).
- Setting up of transnational pipelines (e.g. from Central Asia, Middle East etc.) to provide an alternative to LNG for gas imports (no tangible signs of progress).

#### Challenges Ahead

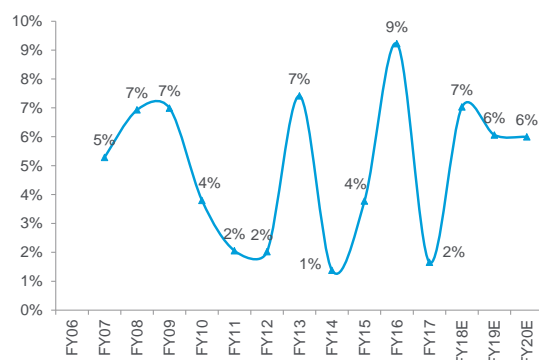
While all of the above reforms are indicative of the government's commitment to revive investments in the oil & gas sector to achieve its broader policy objectives of lowering import dependence, opening the sector to competition, and scaling down subsidies, some of the challenges that we see are:

- Given the poor performance track record of India's upstream state-owned enterprises (SOEs), the revival of E&P activities in India may face some hurdles, in the absence of participation from private/foreign players who are armed with more technical expertise.
- The absence of some financial support or an adequate regulatory framework could impede development of gas transportation infrastructure.
- The poor state of gas-based power generation capacities and the increased dominance of coal in India's power mix pose a challenge to the government's target of increasing the share of gas in India's overall energy mix to 15%.

## Coal

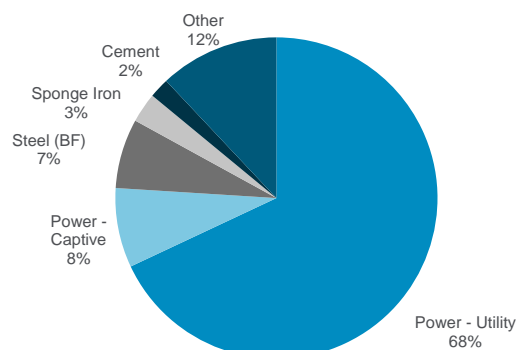
Although India's proven coal reserves of 118 billion tonnes can last for 100 years, the sector has been plagued by several regulatory challenges and inefficiencies and the potential of this resource remains underutilized. Coal-based thermal power generation is the mainstay of power generation in India, accounting for >75% of total power generated in India. Coal India is the dominant producer accounting for ~70% of total coal consumed in India and also employs 70% of the mining workforce of ~500 thousand workers.

Figure 99. Coal India – Despatch Growth



Source: Company Reports, Citi Research

Figure 100. India Coal Demand by Source (%)



Source: Ministry of Coal, Citi Research

Coal demand in India is predominantly driven by power consumption. Thermal power plants in India had been suffering from coal shortages owing to difficulties faced by Coal India in increasing its production (just ~2% compound annual growth rate over FY11-14). This however has been largely resolved over the past few years when Coal India's production growth accelerated to ~7% in FY15 and to ~9% in FY16.

**Steps by government to improve coal production:** Environment and forest clearances were fast-tracked and land acquisition has improved due to better coordination with the states. Furthermore, the Coal Ministry is collaborating with the Rail Ministry to ensure adequate rake availability.

### Coal India Has Ambitious Targets

Coal India had embarked on an ambitious production target of 1 billion tons of coal by FY20 and has identified mines with a total production capacity of 908 million ton (mt) so far. However with demand not matching the pace of production increase, Coal India had to scale back these targets and currently are targeting 630mt of coal production in FY19, ~8% CAGR over FY17.

Figure 101. Coal India (CIL) – Volume Targets

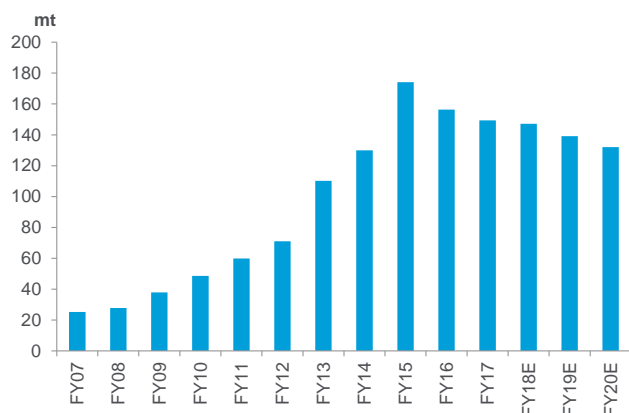
(mt)	FY16	FY17	FY18E	FY19E	Total Potential
CIL Despatches	530	539			
% Change	9.2%	1.6%			
Coal Ministry Target			600	630	908
% Change			11.4%	5.0%	
Citi est for CIL Despatches			577	611	
% Change			7.1%	5.9%	

Note: CIL's FY19 production target at ~630mt is lower than the potential production as it had to scale back its targets due to muted demand growth.

Source: Company Reports, Citi Research

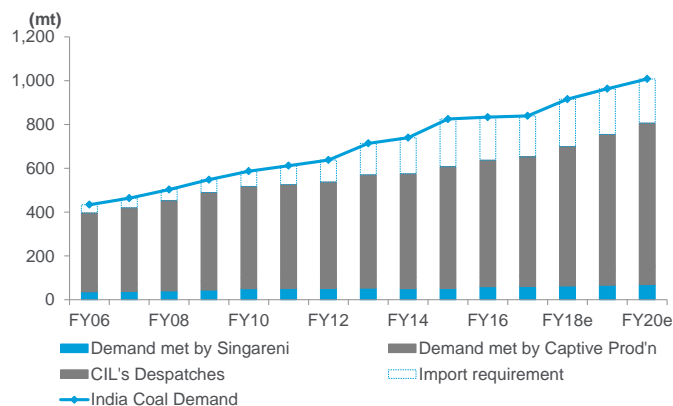
## Expect Thermal Coal Imports to Decline

Figure 102. India Thermal Coal Imports Expected to Fall



Source: Ministry of Coal, Company Reports, Citi Research

Figure 103. Evolution of Indian Coal S&D



Source: Ministry of Coal, Company Reports, Citi Research

Figure 104. Coal Imports by Power Sector

	For Blending	For Plants designed on Imported Coal	Total Imports by power
FY14	37.8	42.2	80.0
FY15	48.5	42.7	91.2
FY16	37.1	43.5	80.6
FY17	19.8	46.3	66.1

Source: CEA

With improving production from Coal India, India's thermal coal imports have been declining since FY15. We expect this trend to continue. Thermal coal imports can be broadly categorized into three parts; (1) imports by power plants for blending with domestic coal (expected to decline); (2) imports by power plants designed to operate on imported coal (expected to remain sticky); and 3) imports by the non-power sector such as aluminum, cement etc.

Given that India does not have adequate coking coal reserves, most of India's coking coal requirement should continue to be met by imports.

## Recent Reforms

### Auction of Captive Coal Blocks - Slow Progress on Production

In September 2014, the Supreme Court ruled coal block allocations in existence since 1993 arbitrary and illegal. Later on, more transparent policies were formulated to allow e-auction of coal blocks to private users (cement/steel/power) and allocation to public sector undertakings (PSUs). Three rounds of auctions have been held so far with 34 blocks successfully auctioned.

However of the blocks auctioned, only 15 have started producing although substantially below capacity. Round 4 of the coal block auctions (total capacity of ~14mtpa) had to be cancelled owing to limited interest from bidders. These auctions are now postponed indefinitely.

## Expected Reforms

### Commercial Mining of Coal (Discussion Paper Floated)

The Indian government is in the process of allowing commercial mining of coal for the first time since the nationalization of coal in 1975. Highlights of the proposal include no restriction on end use, flexibility to decide pricing and selling strategy, and flexibility on production quantity (within limits). The company that offers to pay the highest amount of royalty to the state will win the block. In case of undue profits, when coal prices rise above normal, the miner will have to share a percentage of the gains with the state government. The revenue sharing from mining of these natural resources would bolster the fiscal strength of the states and help in channelizing these resources for redistributive purposes.

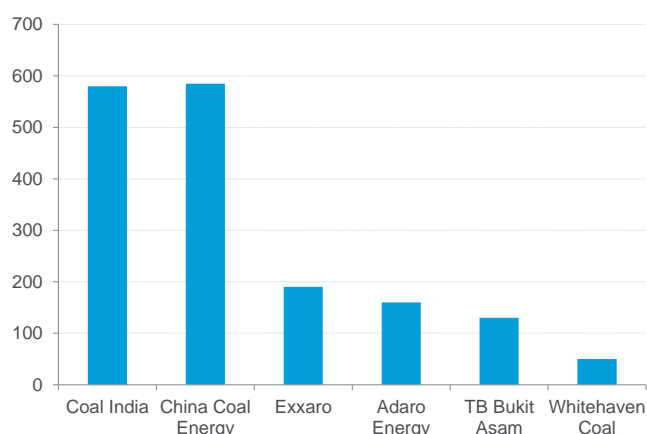
However, from an industry perspective, it could be a few years before these mines start producing. Output from these mines would compete with Coal India's e-auction volumes and imported coal. Impact of commercial mining on coal prices in India would depend on: (1) demand vs. additional supply from commercial miners; (2) cost of production for the commercial miners plus share of revenue share; and (3) demand and pricing dynamics for washed coal.

## Challenges for the Sector

### Excess Manpower Leading to Inefficient Production

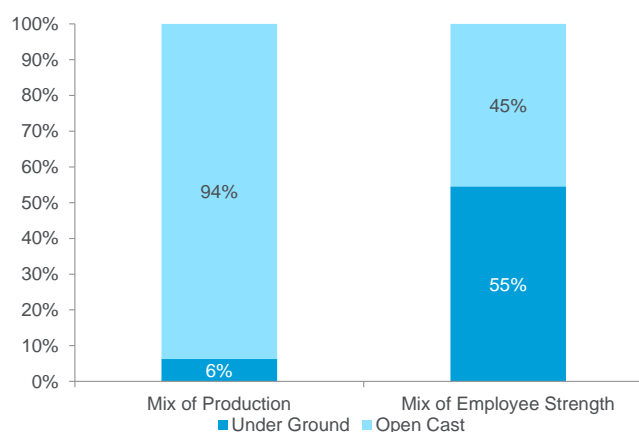
Coal India has excess manpower when compared to most global coal miners. Most of this excess manpower is utilized in underground mines, which employ >50% of the workforce and contribute to just ~6% of the production. That said with ~60% of the workforce being >46 years of age, natural retirement should ease this issue over a period of time.

**Figure 105. CIL's Manpower Per Million Tons of Production vs. Other Miners**



Source: Company Reports, Citi Research

**Figure 106. CIL's Underground Mines Account for Just 6% of the Production but Take Up ~55% of the Employee Strength**



Source: Company Reports, Citi Research

### Quality Concerns

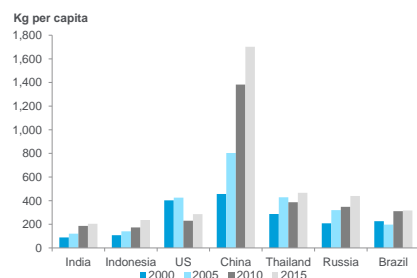
Indian coal is on average of lower calorific value (bulk of production ranges between 3,700-4,600kcal/kg) compared to global peers (5000-6000kcal/kg). Additionally Coal India's coal has an ash content of 36-45% (company reports) compared to an ash content of <10% for Indonesian coal. This can be partly corrected by 'washing' the coal. Yet washed coal currently accounts for just ~2-3% of Coal India's despatches owing to the higher cost of washed coal.

Despite these challenges, the importance of coal in India's development over the next decade would remain high and hence improving efficiencies in this sector through larger private participation should be targeted.



## Cement

Figure 107. Cement Demand Per Capita

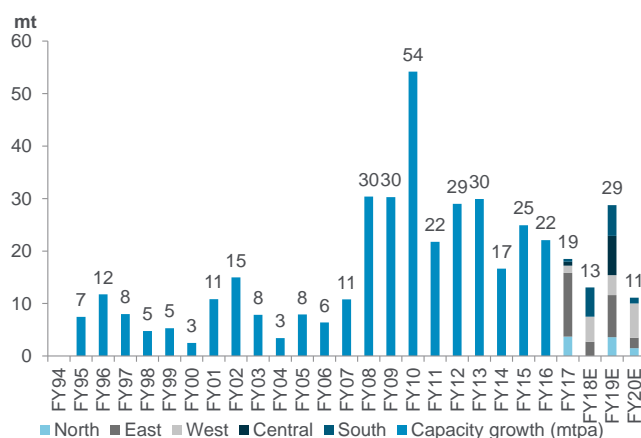


Source: USGS, UN, Citi Research

Cement is a critical intermediate input in a growing emerging economy with large housing and infrastructure needs. The Indian cement industry is currently the second largest in the world with a consumption of ~275mt. China which is the largest producer consumes ~8x more at ~2.3bn tonnes. With increasing investment in infrastructure, we expect India's cement market to transition from being focused on housing to more infrastructure-focused.

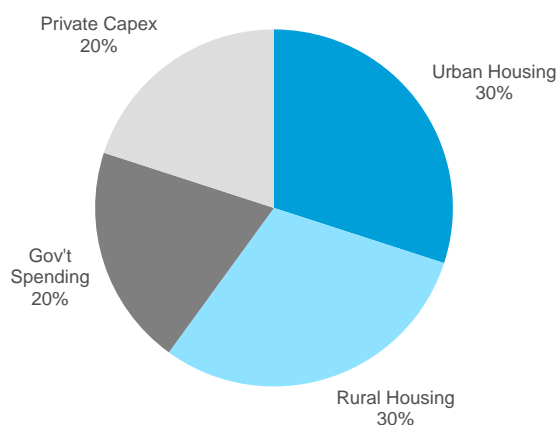
Since deregulation in 1991, the total installed capacity of cement plants in India has grown from 65mt to ~450mt currently. Almost all cement producers in India are private players with high concentration ratio at the top.

Figure 108. India – Cement Capacity Addition per Year



Source: Company Reports, Citi Research

Figure 109. India Cement Demand By Sector



Source: Company Reports, Citi Research

### Stages of Cement Demand Growth

Cement demand in a country grows in three stages. In the **first stage** cement consumption ranges within 100-200 kgs per capita with housing being the key driver of demand. India is currently in this stage. The **second stage** starts post a pick-up of infrastructure development in the country. Most cement starts getting sold in bulk and housing ceases to be the key driver of demand. Per capita cement consumption in this stage can range between 400-700 kgs and can be as high as 1,000 kgs (China currently > 1,600 kg per capita). The **third stage** begins with the completion of infrastructure development with demand stabilizing at 250-300 kg per capita – driven by maintenance requirements. Developed nations such as the U.S. are currently in this stage.

Cement demand growth over the past few years has been largely driven by government spending on infrastructure. Key sources of government-led cement demand highlighted below:

- **Affordable housing rural:** 10 million units to be constructed by March 2019 vs. 3.1 million constructed in FY17; 40 million units by 2022. Constructing a ~25 sqm rural house requires ~4 tonnes of cement.
- **Affordable housing urban:** 20 million units by 2022.

- **Roads:** 83,700km to be constructed over five years vs. 8,200km constructed in FY17. One lane of 1km concrete highway requires ~600 tonnes of cement. A typical highway would comprise of four lanes although the entire stretch of the highway may not be built with cement. One lane of 1km bitumen highway consumes ~150tonnes of cement.

### Overcapacity can be a Near-term Challenge

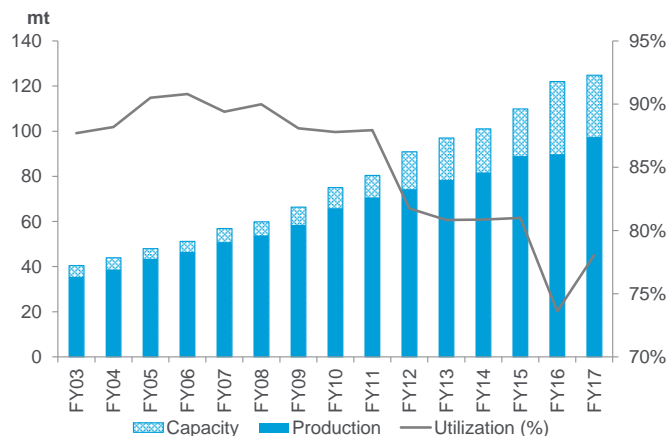
The Indian cement industry saw a rapid pace of capacity expansion in FY08-15 with capacity growing at ~10% CAGR. This was in response to the strong demand prior to the Great Financial Crisis when capacity utilization touched ~90%. With the pace of capacity additions exceeding demand growth post the Great Financial Crisis, all India capacity utilization had dropped to ~65%.

That said, we expect the pace of capacity additions to moderate going forward (~5% compound annual growth rate up to FY20). With demand growth exceeding supply growth, expect utilization to improve.

## Steel

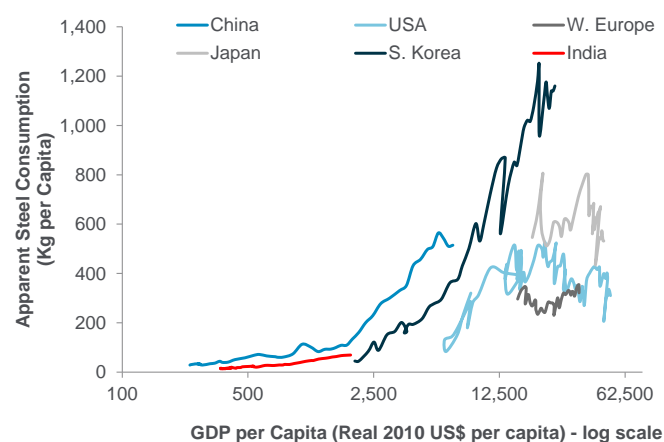
India is the fourth largest steel producing region (2017 production at ~95mt) behind China (~808mt), the EU (~162mt), and marginally behind Japan (~105mt). The sector is largely dominated by private companies which Steel Authority of India Ltd. (SAIL) and Rashtriya Ispat Nigam Ltd (RINL) being the two major government owned companies. The sector is largely deregulated though government intervention in the sector has recently come in the form of protectionist trade measures in the wake of increasing imports from China, Japan, and Korea.

Figure 110. India Steel Capacity, Production



Source: Company Reports, Citi Research

Figure 111. Steel Demand vs GDP per Capita



Source: World Bank, USGS, World Steel Association, Citi Research

### Government Targets Set in National Steel Policy

Steel demand tends to increase as countries transition from low- to middle-income levels. India currently has a per capita steel consumption of ~60kg per capita. The Union Cabinet has given its approval for National Steel Policy (NSP) 2017 to promote domestic steel usage and ensue a scenario where production meets the anticipated pace of growth in consumption.

#### Key highlights:

- The NSP 2017 aspires to achieve 300MT of steel-making capacity by 2030 (capacity as of January 2017 ~125mt).
- Increase per capita steel consumption to the level of 160kgs by 2030 from ~60kg.
- The Ministry will ensure availability of raw materials like iron ore, coking coal and non-coking coal, natural gas etc. at competitive rates.
- To promote the development of domestic steel industry, the policy mandates to provide preference to Domestically Manufactured Iron & Steel Products in government procurement.

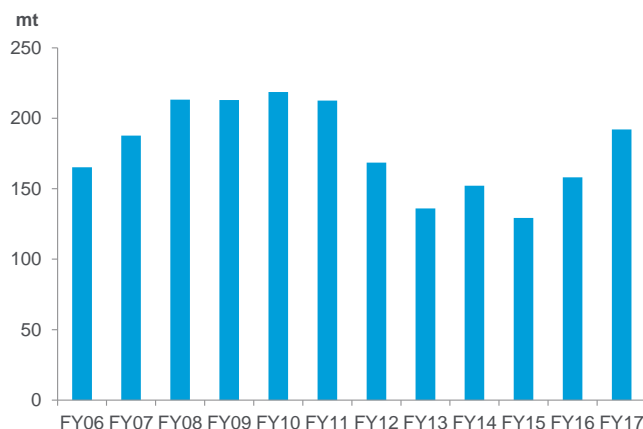
## Iron Ore as a Critical Raw Material for Steel

One ton of steel requires ~1.7 tons of iron ore. India is largely self-sufficient in iron ore with 6-7 billion tons of reserves (~40 years of demand). Most iron ore production in India is contributed by the eastern states of Odisha, Jharkhand, and Chhattisgarh followed by Karnataka and Goa.

India's Iron ore production suffered in FY11-13 as mining was banned in multiple states to check illegal/excessive mining. However, these issues have since been resolved with production on an uptrend since FY15.

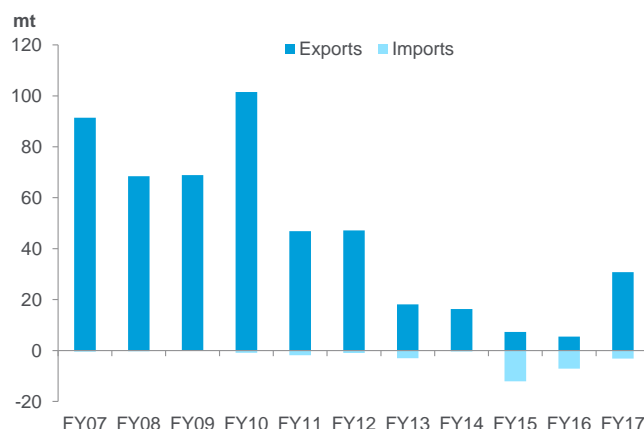
Indian iron ore production is largely predicated on domestic steel demand (subject to mining caps) as exports have tended to be restricted by a 30% export duty on high-grade iron ore. India produced ~190mt of iron ore in FY17; exports were ~30mt. Iron ore miners have been demanding removal of export duty on high grade ore but this has been kept in place with a view of increasing value addition within the country.

Figure 112. Indian Iron Ore Production (mt)



Source: Indian Bureau of Mines, Citi Research

Figure 113. Indian Iron Ore Trade (mt)



Source: Indian Bureau of Mines, Ministry of Commerce, Citi Research

## Recent Regulatory Interventions to Protect the Steel Industry

The Indian government had imposed multiple trade protectionist measures in response to increasing imports from China in 2014-15.

- **Safeguard Duty:** As a first step against increasing steel imports, the government in September 2015 imposed a provisional safeguard duty @20% on steel hot rolled coil (HRC) imports. Final duty was imposed in March 2016 for 3 years.
- **Minimum Import Price (MIP):** The government had imposed a minimum import price (MIP) on 173 steel products from February 5, 2016 for six months. Imports into India would not be allowed below the MIP price.
- **Antidumping Duty:** Given that there were questions on the viability of MIP as a long-term protectionist measure, the government launched antidumping investigations on multiple steel products in 2016. Antidumping duties are currently in place for hot rolled (HR), cold rolled (CR), seamless tubes, pipes, wire rods, and color coated products.

### Insolvency Resolution Process Could Help in Market Consolidation

With the slump in steel prices from 2013-16, many greenfield steel projects suffered from project delays and accumulated significant debt hurting the banking system in India.

Five steel producers with total capacity of ~23mt are currently under the insolvency resolution process. Press reports indicate active interest by domestic as well as global steel producers in acquiring the assets. Post transfer to a new owner, these assets can ramp up their utilization on easier access to credit for working capital and complete their expansion plans.

### Challenges

- Threat from imports given the size of the Indian market relative to China.
- Dependency on China for steel pricing.
- Long time (multiple years) required to complete land acquisition for greenfield capacity.

## Soft Infrastructure

It is true that physical infrastructure creation is extremely important for growth and productivity in an emerging economy but at the same time the importance of 'soft' infrastructure in the form of health and education cannot be overlooked. This is particularly true for a country like India which is enjoying a rare demographic dividend. Without significant investment in soft infrastructure the full potential of this demographic boom will not be realized. Unfortunately the initial conditions are not very favorable for India when it comes to soft infrastructure. This only underscores the necessity of channelizing increasing public and private funding for these sectors and ensuring optimal usage. In this section we explain the immediate challenges facing these sectors and also suggest the ways in which health and education can become two important drivers of labor productivity.

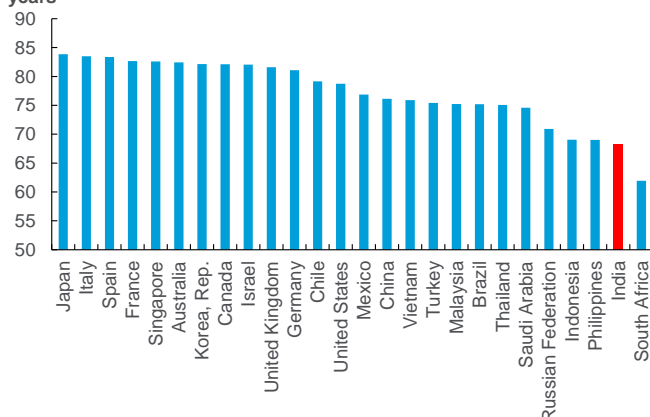
## Healthcare Reforms

While good health is an outcome by itself, it also plays an important role in nation building through enhanced productivity of human capital. India's health outcome indicators such as infant mortality rate and life expectancy are worse than the peer countries and substantial gaps persist as far as health infrastructure is concerned. Even though India remains committed to achieving United Nations' Sustainable Development Goals (SDG) stringent targets on health outcomes, it currently ranks 128 out of 188 countries in meeting those goals according to a Lancet study.

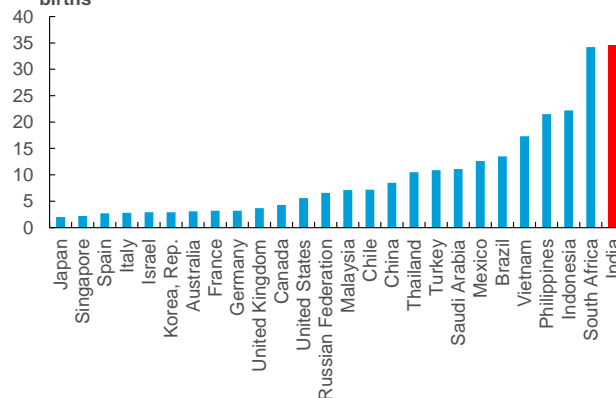
### A look at Health Outcomes – Improving but Not Enough

Life expectancy at birth is the simplest measure of overall health outcomes in a country, and India has seen significant improvement in recent years. Over last 15 years, the life expectancy in India has gone up from 58.3 years to 66.9 years for males and 59.7 years to 70.3 years for females. Yet it lags behind its EM peers (vs 76 years for China, 75 for Brazil). Child and maternal malnutrition continues to be the leading risk factor for health loss in India. As per the World Development Indicator, infant mortality ratio in India is among the highest at 34.6 (vs. 8.5 in China, 13.5 in Brazil).

The nature of disease burden has also been changing for India. A recent study by the Indian Council of Medical Research shows that the disease burden of infectious and associated diseases in India has dropped from two-thirds of the total in 1990 to a third in 2016, with a corresponding rise in the disease burden of non-communicable diseases (such as cardiovascular diseases, diabetes, cancer, lifestyle diseases) from one-third to more than half. This is probably a result of the rising per capita income and the changing nature of jobs in the economy.

**Figure 114. Life Expectancy at Birth**  
years

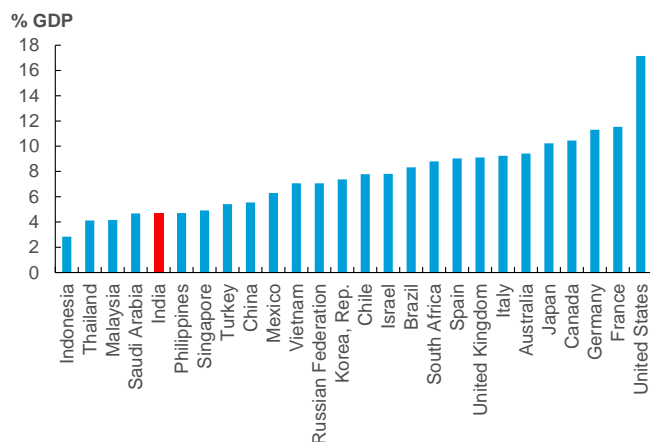
Source: World Bank, Citi Research

**Figure 115. Infant Mortality Rate**  
Per thousand births

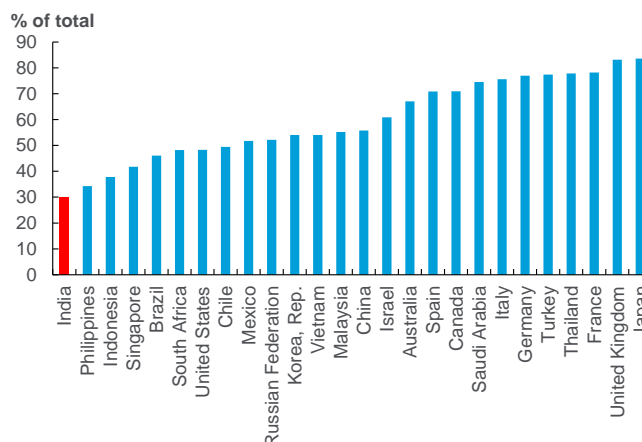
Source: World Bank, Citi Research

### Public Expenditure on Health Amongst the Lowest

India's total health expenditure as share of GDP stood at 4.7% which is roughly half of the global average of around 9.9% of GDP. Of the total healthcare expenditure, the government spending share in India is only 30% as opposed to the global average of 60%. As a result, most of the healthcare expenditure is out of pocket (OOP) expenditure estimated at around 62%, which compares with a global average of around 22%. According to the World Health Organization, OOP payments are the least equitable way to finance the health system as they only grant access to the health services and health products that individuals can pay for, without solidarity between the healthy and the sick. Combining the total expenditure and private share, it can be estimated that while private expenditure on healthcare remains comparable in India with rest of the world, the public expenditure falls short. Finding an adequate amount of resources for public spending on health becomes challenging because of limited fiscal resources, demand for other more populist uses, long gestation lag between spending on health and its outcomes, and achieving the right balance between spending by state and central governments.

**Figure 116. Health Expenditure in India Less than Half the Global Average**

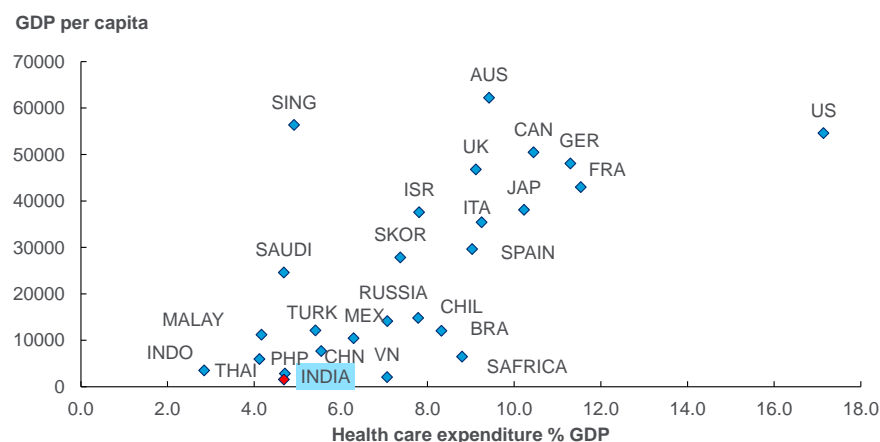
Source: World Bank, Citi Research

**Figure 117. Public Expenditure Share Lower than Global Average**

Source: World Bank, Citi Research

India's low healthcare expenditure can largely be attributed to lower per capita income. As seen in the plot below, the healthcare expenditure is positively correlated with the level of income. The per capita healthcare expenditure in India stood at \$267 (PPP adjusted) which is in line with the low and middle income countries average of \$272 but is around a fifth of the global average of \$1270.

**Figure 118. Lower Healthcare Expenditure Associated with Per Capita Income**



Source: World Bank, Citi Research

### Health Infrastructure – Improvement Underway but Not Enough

The inadequate expenditure in healthcare is reflected in a large infrastructure gap, with the number of hospital beds in India at abysmal 9 per 10,000 population which compares with global average of 30. More than half of the new bed additions in India have been done by the private sector between 2002 and 2010. Similarly there is a shortage of trained medical workforce with only 6.5 doctors per 10,000 population that compares with 24 in the U.S. and 38 in Australia.

**Figure 119. Healthcare Infrastructure Parameters per 10,000 Inhabitants**

	China	India	Indonesia	Malaysia	Singapore	Thailand	Australia	U.S.
Physicians	14.6	6.5	2	12	19.2	3	38.5	24.2
Nurses and Midwives	15.1	10	13.8	32.8	63.9	15.2	95.9	98.2
Dental	0.4	0.8	0.4	1.4	3.3	0.7	6.9	16.3
Hospital Beds	39	9	6	18	27	21	39	30

Source: World Health Statistics, Citi Research

More importantly, as per the National Sample Survey Office (NSSO) 71st Health Survey report, as high as 86% of the rural population and 82% of the urban population are not covered under any scheme of health insurance support. Even among those who are covered, most of them are covered under central government funded insurance scheme i.e., Rashtriya Swasthya Bima Yojna (RSBY) or different state government funded schemes.



## Path Forward for Healthcare Sector

As per a McKinsey report (Inspiring Possibilities, Challenging Journey), lessons from countries that could dramatically improve health outcomes (such as Brazil, Thailand, South Korea) could be summarized as strong political commitment, creating universal access as a primary focus, reducing out-of-pocket spend, government choosing between the payor or provider role, and finally collaboration with private sector. With healthcare being the focus of both state and central government, the political commitment remains high. With regard to creating universal access and reducing the out of pocket spend, the government's latest initiative Ayushman Bharat aims to provide coverage to 500 million beneficiaries for secondary and tertiary care hospitalization. It is however not clear whether the government will exclusively make a choice of being a payor or a provider.

In this regard the government recently released its National Health Policy, 2017 which set out following quantitative goals and objectives:

- Increase life expectancy at birth from 67.5 to 70 by 2025;
- Increase health expenditure by government as percentage of GDP from the existing 1.5% to 2.5% by 2025; and
- To have around 20 beds per 10,000 population to be accessible during the critical time frame.

## Universal Insurance – Modi Government's Ambitious Program

During the FY19 budget presentation, the Modi government launched its ambitious Universal healthcare program under the Ayushman Bharat program as the National Health Protection Scheme, which will cover over 100 million poor and vulnerable families (approximately 500 million beneficiaries) providing coverage of up to Rs500,000 per family per year for secondary and tertiary care hospitalization. This will be the world's largest government funded health care program. While the final contours of scheme are still awaited, some of the details that have emerged are as follows:

- The government will require Rs120 billion (\$1.9bn) for its implementation. This assumes insurance premium of Rs1200 per family (~\$19 per family);
- The program is likely to be launched from October 2018;
- The cost will be shared on a 60:40 basis between central and state governments; and
- The program also envisions setting up or converting some 150,000 sub-centers in the country into "health & wellness" centers which will offer a set of medical services.

That said, the agreement between center and state has yet to be worked out and financial resources made available, thus uncertainties still remain on the scheme.

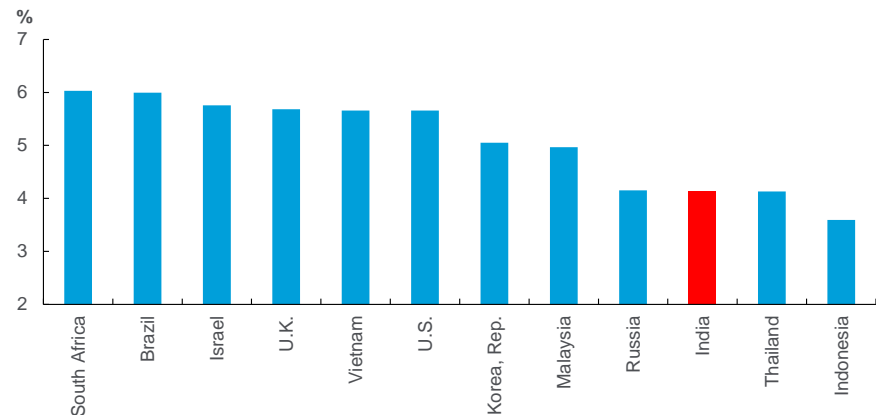
## Education and Skill Development

Education and skill development are crucial to reaping the maximum out of India's demographic dividend. Progress in these parameters not only increases labor productivity but also improves gender parity which is crucial for a country with extremely low female labor force participation. On the other hand investment in research and development (R&D) has the potential to change the contours of India's productivity landscape. Here we discuss the state of affairs in education and skill development and point out what more needs to be done to improve labor productivity substantially.

### Public Expenditure on Education Low by Global Standards

India's public expenditure on education as a percent of GDP has increased substantially through about the 1990's when it reached close to 4% but has remained practically unchanged after that despite a double-digit compound annual growth rate. In fact, the growth in spend on education has moderated in the last few years to single digits and the proportion to GDP might have dropped to ~3.5%. This ratio is lower than most of the peer countries and needs to go up to an aspirational target of 6%.

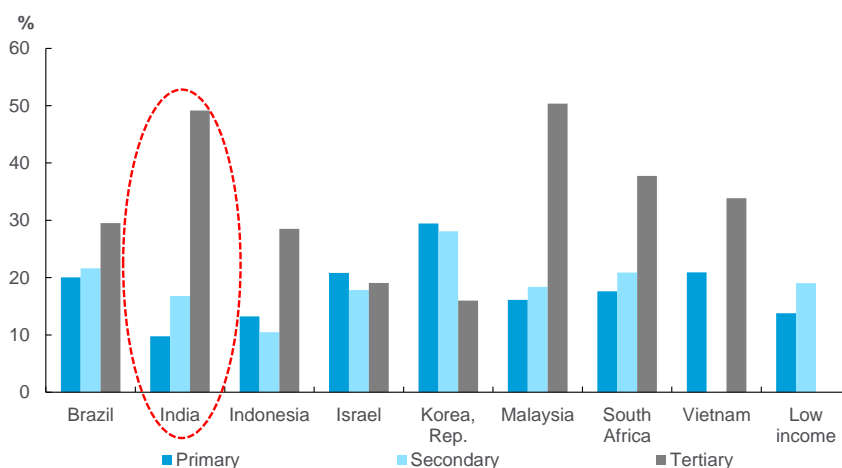
Figure 120. India's Public Expenditure on Education Lower than Peer Countries



Source: UNESCO, Citi Research

In fact, what is interesting is that India lags relatively more on spending in primary education compared to spending on tertiary education. India's spend per student as percent of GDP per capita (which takes care of the level of development of each economy) is lower than even the average of Low Income economies. This is quite lopsided spending as India is yet to achieve quite a few of its basic education goals. However, the relatively lower per student spend on primary education should not be confused with the fact that almost half of public expenditure on education happens at the primary level with states having a larger share than the central government.

Figure 121. India Spends Relatively Less on Primary Education, More on Tertiary



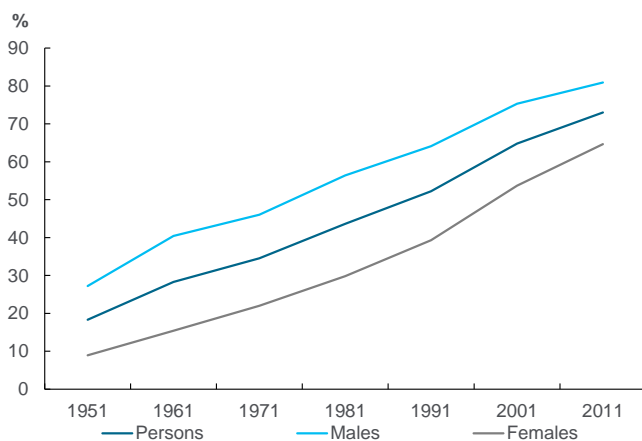
\* govt exp per student as % of GDP per capita

Source: World Bank, Citi Research

### Some Improvement in Basic Education Parameters

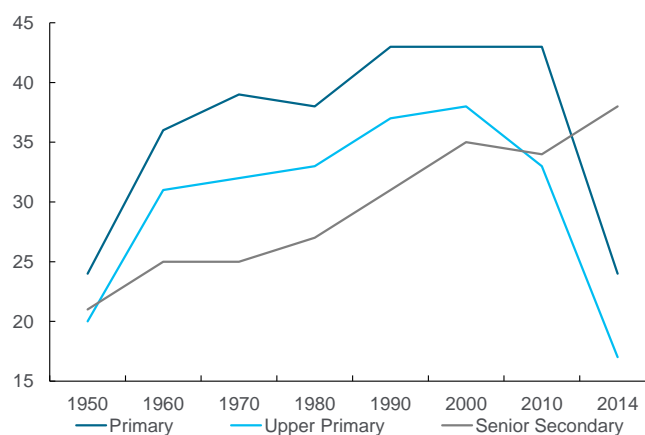
Despite stagnating public expenditure on education (as % of GDP) India has been able to achieve steady improvement in parameters like **literacy rate** and **pupil-to-teacher ratio (PTR)** with a somewhat narrowing of the gender gap in the literacy rate. The propensity to opt for primary education has further improved after the Right to Education Act of 2013. The Act provides for free compulsory elementary education for all students up to Standard 8.

Figure 122. Literacy Rate Steadily Increasing, Gender Gap Narrows



Source: Ministry of Human Resources, Citi Research

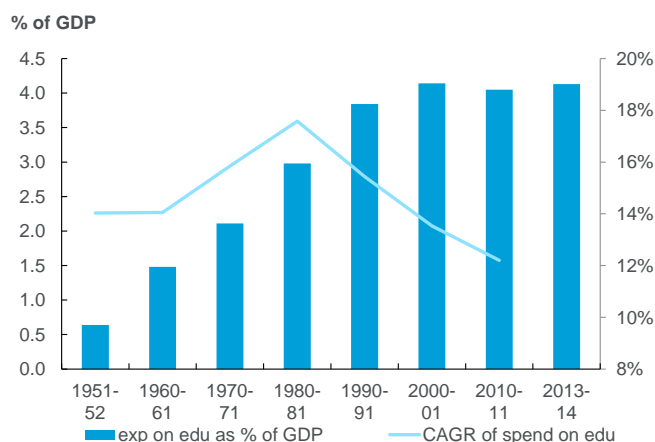
Figure 123. Pupil/Teacher Ratio has Improved in Primary Education



Source: Ministry of Human Resources, Citi Research

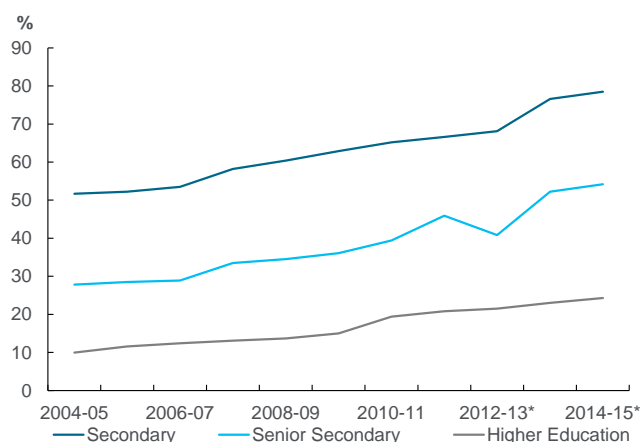
The **Gross Enrolment Ratios (GER)** for Secondary and Higher education have also gone up in recent times as India takes significant steps to reduce dropouts at early school levels. Primary school dropout rates have been reduced to only 4.34% but secondary school dropout rates remain significantly high at 18% as the benefits of Right to Education Act ceases to exist at that level.

Figure 124. Public Expenditure on Education Stagnates



Source: Ministry of Human Resources, Citi Research

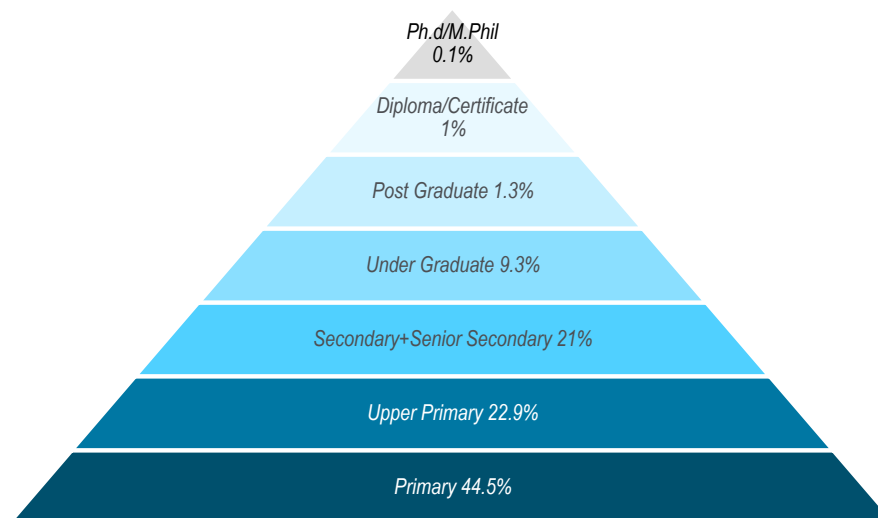
Figure 125. Improving Gender Parity a Positive Development



Source: Ministry of Human Resources, Citi Research

Improving **gender parity in education** has also been an important objective as even in the 1990's it was at 0.75% in the primary level. This ratio has now moved above 1 and even at the level of higher education we are increasingly finding more women. This is a welcome development as over time it has the potential of altering the abysmally low female labor force participation rate. The pyramid of student registrations indicates that the preference to opt for vocational training is still very low.

Figure 126. Education Pyramid – Proportion of Registered Students



Source: Ministry of Human Resources, Citi Research

### The Fault Lines from the ASER Survey – Lack of Vocational Training

The Annual Status of Education Report (ASER) 2017 finds that 86% of youth in the 14-18 age group are enrolled in the formal education system but by the age of 18, ~30% move out of the formal system. According to this survey only 5% of the youth are opting for any vocational course and among the ones registered, ~60% prefer a course of six months or less.

## The Education Employability Disconnect

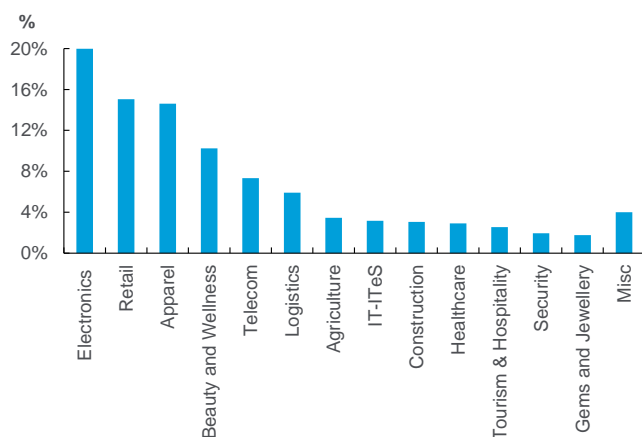
This is one of the factors driving the disconnect between education and employability, which has led to a very high level of youth unemployment. In 2014, youth unemployment was 12.9% among 18-29 year olds, with 18.2% of females in this age group unemployed. The fact that the unemployment rate for graduates and above was 28% could be a cause of concern. On top of this high youth unemployment, ~60% of the unemployed graduates and post-graduates cited lack of jobs matching their education and experience as the reason for their unemployment. This is a reflection of the aspirations of a newly educated generation which needs to be harnessed.

The ASER 2017 survey also finds that 42% of the youth in the 14-18 year age group were working regardless of whether they were enrolled in formal education. However, ~80% of the working youth were engaged in family farming implying only marginal skill development in the process.

## Skill Development Mission to Bridge the Gap

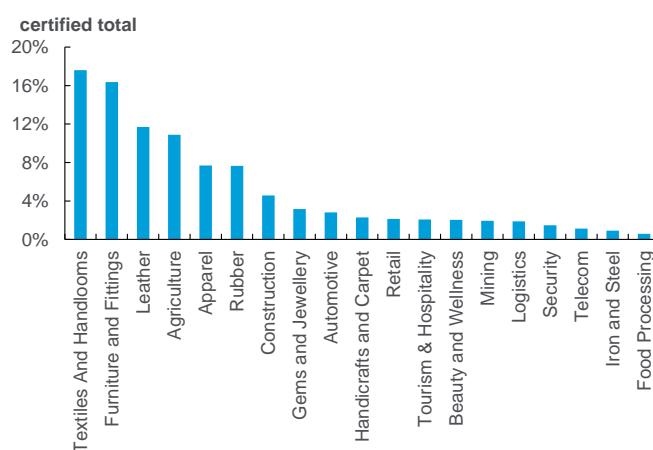
To address some of these challenges, the National Skill Development Mission was launched in July 2015 with Pradhan Mantri Kaushal Vikas Yojana (PMKVY) as its flagship scheme. The target of the scheme is to impart free short-term training to 10 million youth by 2020 at PMKVY training centers and also provide certification to people with prior learning (under the RPL program). We find significant divergence in the sectors where both the schemes are run – new entrants are keen about the new economy jobs in electronics and retail while the older generation wants their existing skills in traditional sectors like textiles, furniture, and leather certified.

Figure 127. Sectoral Dimension of Short-term Training



Source: Skill India portal, Citi Research

Figure 128. Sectoral Dimension of RPL



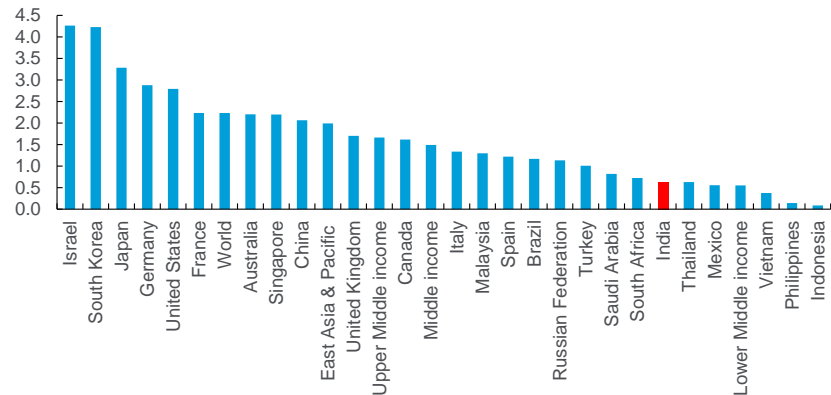
Source: Skill India portal, Citi Research

The PMKVY scheme has provided certification to 0.85 million people in FY17 and 0.58 million people through November 8, 2017. It leaves a steep target of around 2 million people to be trained per year for the remaining period of the scheme. Also, the conversion ratio of trained people being able to get a job needs to improve substantially for the scheme to become more attractive.

### Increasing R&D Spend Required to Boost Productivity

India's estimated gross R&D spend has edged up to ~ Rs1 trillion (\$15bn) in FY17 but as a percent of GDP it has stayed flat around 0.6–0.7% for almost two decades. The ratio is significantly lower than the average of the Middle Income economies, the Asia Pacific economies and the other BRICS countries.

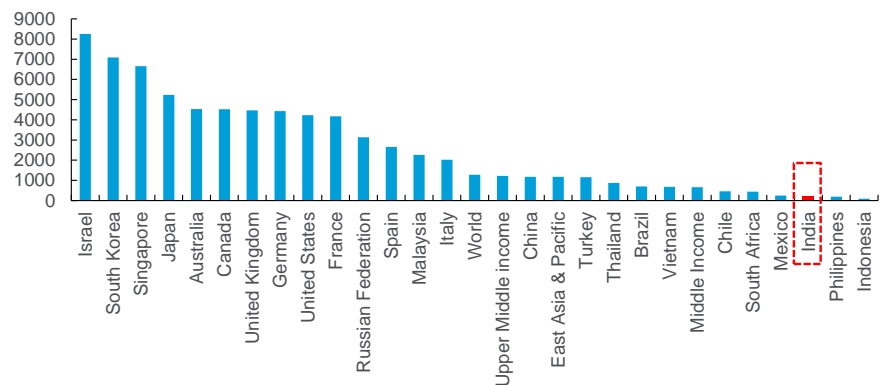
Figure 129. R&D Spend as % of GDP



Source: World Bank, Citi Research

The situation is even more acute when the number of researchers in R&D is considered. Also, unlike some of the other countries, the government (primarily the central government) provides bulk of the R&D spending in India with very little private sector funding. In both China and the U.S., private sector funding of R&D is significantly higher than the government funding.

Figure 130. Researchers in R&D Per Million Population

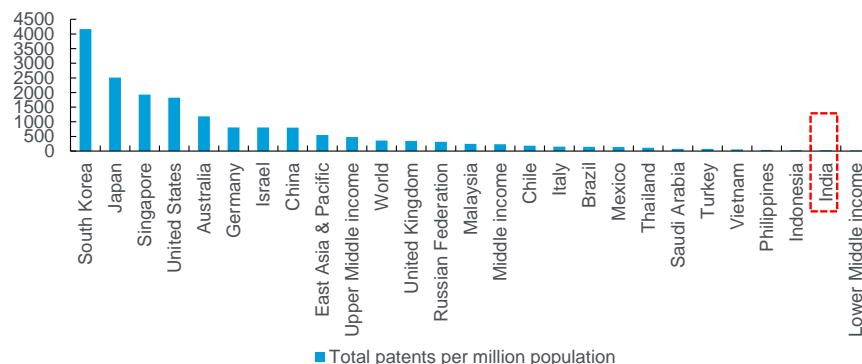


Source: World Bank, Citi Research

## India Lags in Patent Applications Too

Despite a relatively higher number of Ph.D. students in India, per capita patent applications from India (both residents and non-residents) are extremely low by global standards. The Economic Survey 2017-18 notes that although patent applications from residents in India have gone up substantially after 2005, the granting of patents have declined after 2008. Some studies indicate that there are about 200,000 pending patent applications and clearing of this backlog can take up to five years.

Figure 131. Total Patents Per Million Population



Source: UNESCO, Citi Research

## Steps Needed to Enable Education as a Productivity Lever

A plethora of actions is required — from basic primary education to the other extreme of higher R&D spend — to enable education as a productivity lever. We outline a few of our thoughts below

- Increase public expenditure on education to at least 5% of GDP with a focus on primary education so that schooling moves beyond literacy to more foundational skills;
- Incentivize private investment into secondary and higher education to create world-class educational institutes;
- Sustained push towards creating opportunities for skill development and vocational training and converting that into meaningful jobs;
- More private participation in R&D activities with industry-academia cooperation so that the ratio of private R&D funding at least matches the public R&D funding; and
- Encouraging more patent filing and a faster process for granting of patents.

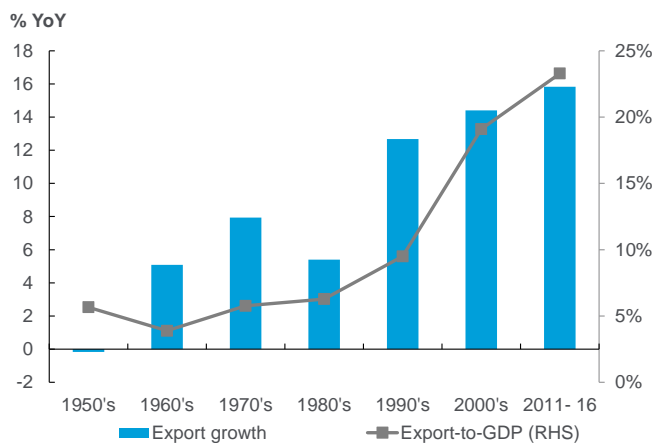
## Exports as a Driver of Growth

An export-led growth model has been followed by quite a few Emerging Market (EM) countries, particularly in East Asia, to come out of their low-level equilibrium trap. In most of these instances, a focus on export-led growth has attracted significant foreign and domestic investment, improved the productivity of labor by facilitating the migration from low-productivity agriculture to high-productivity exports, and increased TFP growth by internalizing technology transfer through the foreign direct investment (FDI) process and integrating into global value chains. In a sense, exports tick all the boxes and hence this could become one of the key components of India's efforts to achieve 8%+ growth.

### The Understated Surge of Merchandise Exports

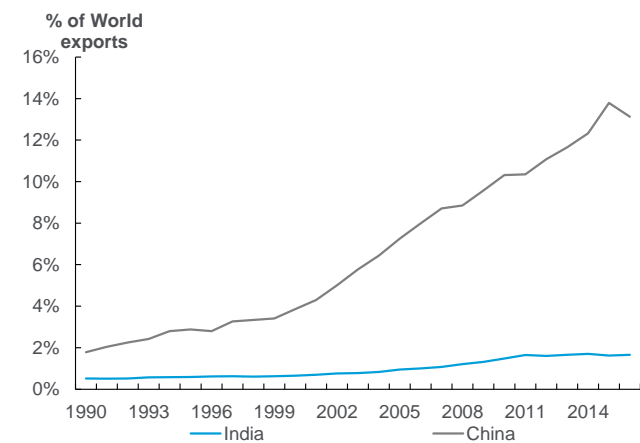
While India's growth story has been connected more with domestic demand, the important role played by exports is often understated. The exports-to-GDP ratio was just 6% in the early 1990's when the external sector was opened up and in a little more than 20 years the ratio had gone up to 25% in 2013. In the process, India has trebled its share of world exports from 0.6% in the mid-1990's to 1.7% in 2013.

Figure 132. Rising Importance of Exports...



Source: CSO, CEIC, Citi Research

Figure 133. ....But Still Miles To Go



Source: World Bank, Citi Research

It is a little concerning that the exports-to-GDP ratio has since declined to 20% in 2016. Export growth which averaged 18% between 2002 and 2008 fell to only 3% during 2012-16 while showing some early signs of revival with 13% growth in 2017. A higher share of exports would not only increase investment opportunities in India but also improve productivity as exporters respond to competitive challenges by improving the quality of their products.

### Service Exports have been Leading the Way

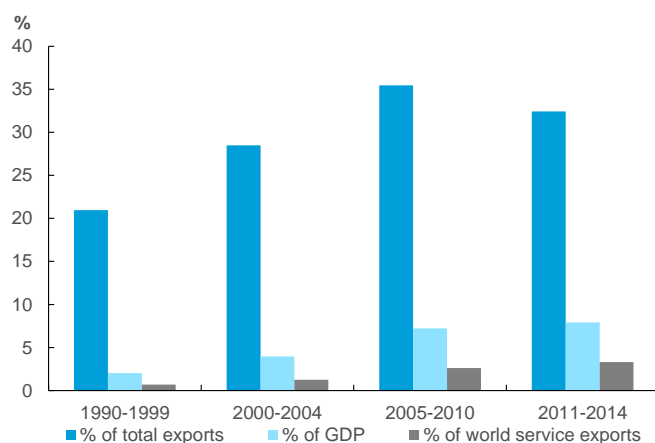
India's service exports have been a more prominent driver of growth in recent times. According to a new IMF dataset,<sup>8</sup> India's share of world services exports has steadily increased from 0.6% in the early 1990's to 3.3% now. Even as a proportion of GDP, service exports are now ~8% — much higher than the 2% posted in the 1990's. Almost half of the services exports are in the telecommunication, computer, and information services segment, followed by other business services, transport, and travel segments.

<sup>8</sup> <http://data.imf.org/ITS>, a new dataset on service exports, data differs from the RBI service exports data but offers a consistent global comparison.



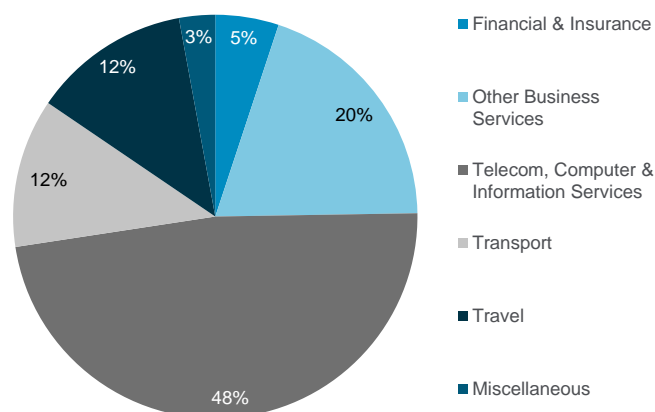
**Emerging challenges:** However, the phenomenal growth seen in services exports between 2005 and 2010 (where the share in world services growth increased from 2% to 3.2%) seems to have halted since 2012 as India's share in world services exports has declined marginally. This is quite concerning as world services exports has not grown quickly in a relatively weak global growth environment and on top of it, India has lost market share to other services exporters. Another headwind to India's service exports has been the relative concentration of IT/Computer-related exports. Without adequate diversification, India could face stiff competition from other economies for a shrinking pie of offshoring volume. It is imperative that India regains its prominence in service exports but we acknowledge that this is an area of private sector dominance without requirement of much government policy support.

Figure 134. Has India's Services Exports Peaked Out?



Source: IMF, Citi Research

Figure 135. Composition of Service Exports

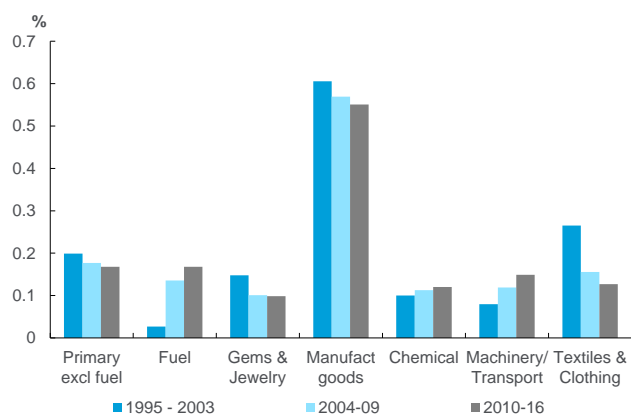


Source: IMF, Citi Research, data for 2014

### India's Export Composition: Labor-Intensive or Technology-Intensive?

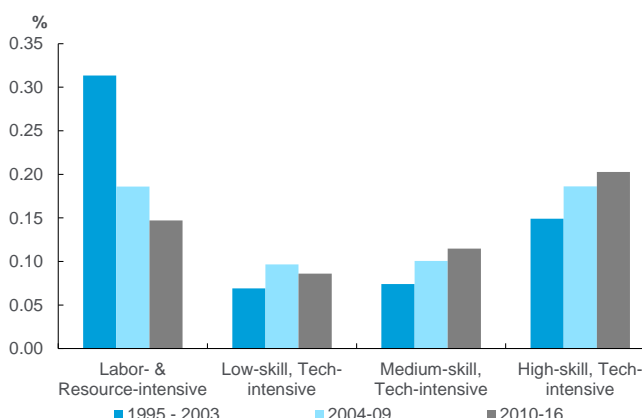
In Figure 136, it appears that the share of manufacturing exports in total merchandise exports has declined over time, but if we add refined petroleum product exports under manufacturing, then the share in exports increases to more than 70% in recent times. In particular, share of exports from sectors like machinery & transport and chemicals (including pharma) have gone up while textiles and gems & jewelry have become less important drivers of exports.

Figure 136. Changing Nature of India's Export Composition



Source: UNCTAD, Citi Research

Figure 137. India's Skill Intensity Improving Only Gradually

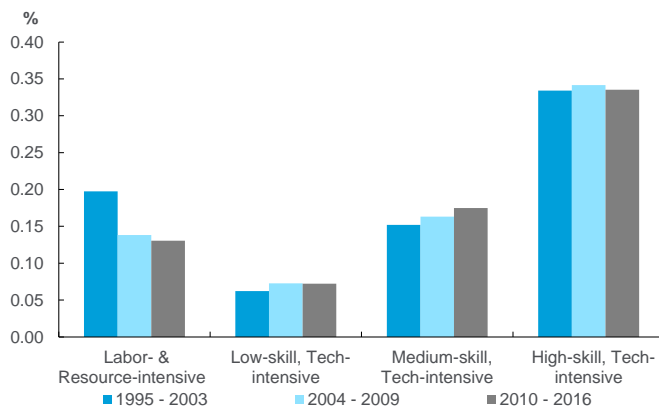


Source: UNCTAD, Citi Research

More qualitatively, we find that the share of labor- and resource-intensive exports has been halved between the 1990's and today (~15%). On the other hand, the share of high-skill, tech-intensive exports has gone up from ~15% to ~20% in the past 15 years. However, the medium- and low-skill tech-intensive exports shares are still very low at ~10% each. These changing shares indicate that India is progressing up in the value chain of exports but a lot of room still needs to be covered.

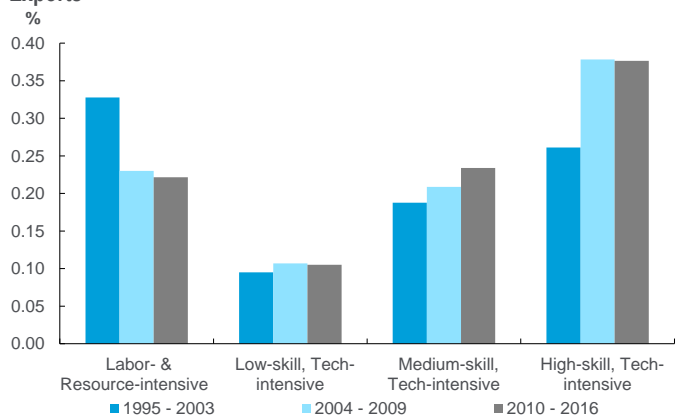
**International comparisons:** For perspective, the share of manufactured goods in total exports has been more than 70% for Developing Asia and has been as high as 94% in China. Even late entrants with an export-led growth strategy like Vietnam has been able to increase this share to ~80% from ~45% just 15 years back. In particular, India has been lagging in high-skill tech-intensive exports – Developing Asia share at ~34% versus India at 20% of total exports.

Figure 138. Developing Asia Manufacturing Exports Composition



Source: UNCTAD, Citi Research

Figure 139. China's Transition from Labor-Intensive to Skill-Intensive Exports



Source: UNCTAD, Citi Research

**India's dilemma:** If India has to increase its share of world exports as part of the 'Make in India' strategy, then it is likely to face an interesting policy dilemma. Given India's relatively lower wages and the impending demographic boom, India might be better off promoting labor-intensive, low-skilled exports. China had around 50% share of these exports as late as the mid-1990's. In fact, the Economic Survey 2015-16 from India's Ministry of Finance documented that most Asian economies had annual average export growth of 20–70% in labor-intensive industries like apparel and leather & footwear in the first 20 years from their year of take-off. India did not experience such a high level of growth in its labor-intensive exports ever (Figure 140) and the lower wage cost advantage has often been negated by lower labor productivity in these sectors. On the other hand, reversing the progress India has made in moving up the value chain in exports might not be positive over the medium term. In this context, we discuss below where India's comparative advantage lies and in which direction more progress needs to be made.

Figure 140. Labor-Intensive Export Growth in Developing Economies

	Year of take off	Annual average export growth for 20 years post take off (%)		
		Apparel	Leather & Footwear	GDP
South Korea	1962	30.4	69.9	9
Thailand	1960	53.8	44.1	7.5
Indonesia	1967	65.8	48.6	7
Malaysia	1970	33.4	27.5	6.9
China	1978	18.6	27.7	9.8
Vietnam	1985	17.8	16.1	6.6
India	1980	12.7	5.4	5.6

Source: Economic Survey 2015-16, Citi Research

## Where Does India's Competitiveness Lie?

We use United Nations Conference on Trade & Development (UNCTAD) commodity wise trade data to analyze where India's Revealed Comparative Advantage (RCA) lies. RCA for a particular commodity is estimated as the share of that commodity in India's exports divided by share of that commodity in world exports. If the RCA is greater than one ( $RCA > 1$ ) then the country is assumed to enjoy a comparative advantage in that product.

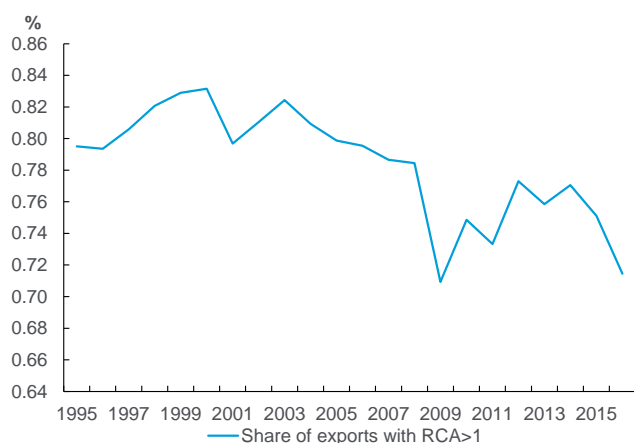
Figure 141. An Analysis of India's RCA

Classic A>1, B>1	Emerging A<1, B>1	Marginal A<1, B<1	Disappearing A>1, B<1
Labor-intensive and resource-intensive manufactures	Mineral Fuels, Lubricants	Medium-skill and technology-intensive manufactures	Ores and Metals
Low-skill and technology-intensive manufactures	Meat & Meat Preparations	High-skill and technology-intensive manufactures	Vegetables & Fruits
Chemical Products		Machinery	
Petroleum Products		Transport Equipment	
Iron and Steel			
Pharma			
Leather & Footwear			
Textile Yarn & Apparel			
Food Items			

Source: UNCTAD, Citi Research, A= average RCA between 2003-08, B=average RCA between 2010-16

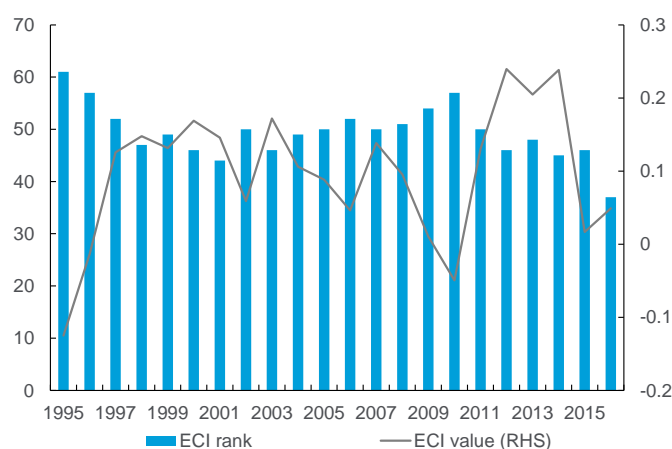
It is interesting that India has revealed comparative advantage in products which have a more than 70% share in overall exports of the country. Over a long period, India has enjoyed a comparative advantage in some food products, cotton – yarn, fabric and apparels, leather goods like footwear, rubber products like tires, motorcycles, pharmaceuticals, some steel products, gems and jewelry, and refined petroleum products. While this holds India in good stead, the country has not been able to find too many 'emerging' export industries where the RCA has moved from below 1 to above 1 in recent times (see Figure 141). India's RCA has remained limited to labor-intensive, resource-intensive and low-skill manufacturing. It appears that India requires a two-prong strategy of better harnessing the sectors where it has an  $RCA > 1$  and focus on increasing the RCA in a few more high-skill sectors.

Figure 142. India has Relatively High Proportion of Exports with  $RCA > 1$



Source: UNCTAD, Citi Research

Figure 143. Economic Complexity Ranking Needs to Improve Further



Source: MIT, Citi Research

## Need to Improve Export Quality

In the past, one of the challenges of India's exports has been a lack of quality and proper branding. In fact, IMF data on export quality shows that Indian exports for different categories are ~10% lower than the median for the group of 26 countries that we have considered earlier (Figure 144). Even in the Economic Complexity Index prepared by MIT, India's country ranking was 37 in 2016, much lower than other export powerhouses. More R&D spend on innovation, patenting, branding, simpler regulation, and improving the physical export infrastructure will go a long way in improving India's export mix and push the share of India in world exports close to 5%. Global markets are becoming increasingly sensitive to technological and quality standards and India needs to overcome this hurdle for a more consistent export growth performance.

Figure 144. India's Export Quality Compared to 25 Emerging and Developed Economies

	Total	Food & Live Animals	Bevs & Tobacco	Crude Materials, inedible, except Fuels	Mineral Fuels, Lubricants & Related materials	Animal & Veg Oils & Fats	Chems	Manufact Goods classified chiefly by material	Machinery & Transport Equip	Misc Manufact articles	Commodities & Transport
Max	1.06	1.03	1.07	1.04	1.04	1.01	1.05	1.02	1.05	1.05	1.05
Min	0.61	0.59	0.67	0.73	0.46	0.36	0.82	0.55	0.82	0.85	0.19
Median	0.92	0.88	0.93	0.88	0.85	0.78	0.96	0.91	0.96	0.96	0.80
India	0.83	0.62	0.83	0.76	0.81	0.85	0.84	0.82	0.84	0.88	0.81
India deviation from median	-10%	-30%	-11%	-13%	-5%	9%	-12%	-9%	-12%	-9%	0%
India deviation from max	-22%	-40%	-23%	-26%	-22%	-15%	-20%	-19%	-19%	-17%	-24%

Source: IMF, Citi Research

## Integration into Global Value Chains (GVCs)

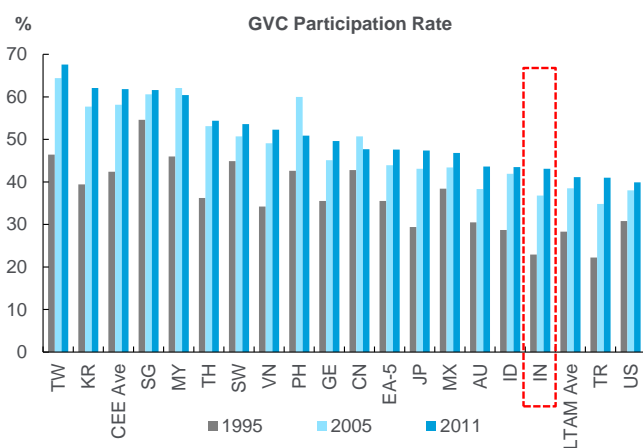
Global value chains (GVCs), or the production networks of interlinked activities performed across geographical boundaries to produce a good or service, are estimated to account for about two-thirds of global trade and are an important driver of growth and jobs. We analyze India's participation in GVCs, both via "backward linkages" (domestic firms using foreign intermediate value added as inputs for its exports) and "forward linkages" (country's exports are inputs to other countries' exports) to assess future prospects.

### India Low on GVC Participation but Rapidly Increasing

Two observations are worth noting: First, India's exports (goods and services) show a relatively low level of participation in GVC compared to East Asia and Europe. This may be attributed to structural factors — larger economies tend to have lower participation rates given their better ability to source intermediate inputs domestically, reducing backward linkages — and geography, as the world appears to be divided into three production spheres centered around the U.S., East Asia (especially China), and Europe (especially Germany) and India's relative distance from these three hubs alongside poor logistics connectivity may help explain the relatively low participation rates. This may also be due to trade and investment policies that may be less conducive to supply chain integration.

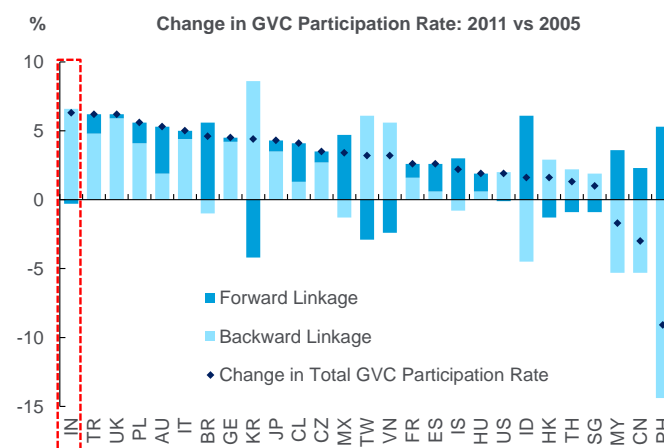
Second, India has seen one of the highest increases in GVC participation rates over the last two decades — from 22.9% in 1995 to about 43.1% in 2011 — driven by the sharp increase in backward linkages. In fact, the foreign content of India's exports has more than doubled from less than 10% in 1995 to 24% in 2011, though based on a OECD 'nowcast' forecast, this is coming off in 2012-2014. This stands in sharp contrast to China, which appears to be sourcing more inputs domestically, integrating its supply chain within local firms, and thus, reducing its overall GVC participation rate.

**Figure 145. India's Participation in GVCs Is Still Relatively Low but Rising Sharply**



Source: OECD TiVa, Citi Research

**Figure 146. Much of India's GVC Participation Rate Increased By a Rising Share of Backward Linkages**

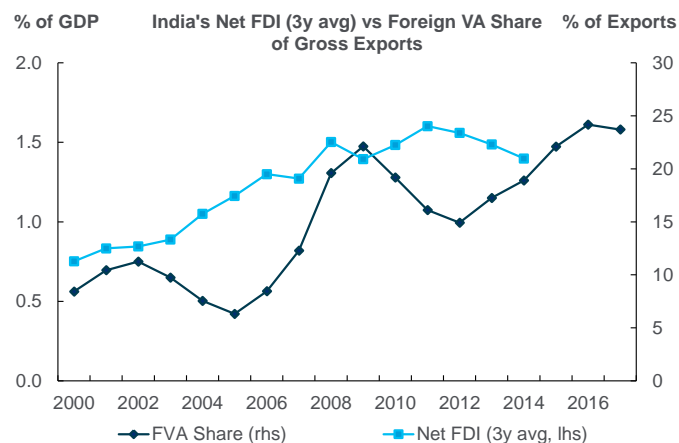


Source: OECD TiVa, Citi Research

### Increased FDI Flows Might be Supporting GVC Integration

The sharp increase has likely been a product of numerous factors – progress in trade and investment liberalization, technological advances that have facilitated more GVC participation, and in more recent years, a notable increase in Foreign Direct Investment (FDI) which is likely strongly associated with a rising GVC participation rate as multinationals are often important actors in organizing global supply chains, especially among poorer countries. Given FDI trends in India have recently improved, the prognosis for a further increase in India's GVC participation rate looks promising (Figure 147). When looking at the composition of FDI into India in recent years, a disproportionate share has gone into the services sector, followed by telecom and automobiles, which could be indicative of sectors ripe for integration.

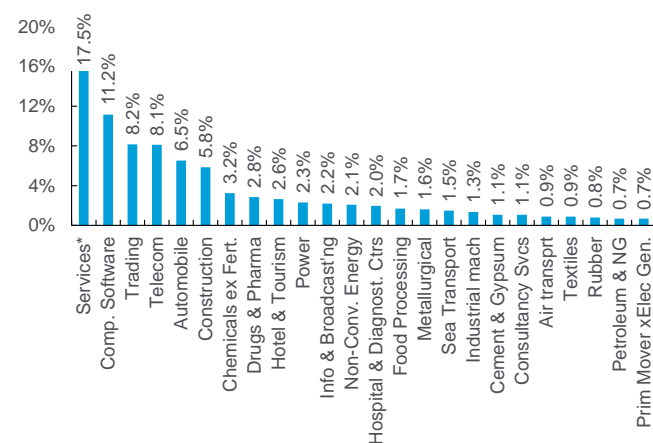
**Figure 147. India's Net FDI Is Highly Correlated (~70%) to the Share of Foreign Value Added (FVA) to Gross Exports**



Note: The 2012-2014 FVA share of gross exports are "nowcasts" from OECD, rather than actual estimates

Source: OECD TiVa, Citi Research

**Figure 148. Composition of Recent FDI Inflows into India (4Q14 to 3Q17) Has Disproportionately Gone Into Services**



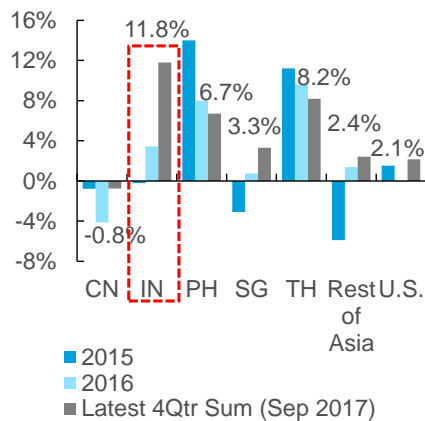
Note: \*Services sector includes Financial, Banking, Insurance, Non-Financial/Business, Outsourcing, R&D, Courier, Technology Testing Analysis

Source: CEIC, Department of Industrial Policy and Promotion, Citi Research

## GVC Integration in Services Trade

A feature of India's role in GVCs is the significant role of services. On average, services exports account for about 19% of Asia's total exports of goods and services over the last 12 months, but services are more prominent in the Philippines (41% share), India (37%), Singapore (28.5%), and Thailand (24%). While the services sector tends to be associated with lower productivity than manufacturing (though this depends on the type of service activity), one positive feature of services exports is its larger domestic value added – averaging about 84% for Asia (90% for India) versus 61% for manufactured goods exports (69% for India).

**Figure 149. Gross Service Export Growth (in \$, % YoY)**



Source: CEIC, Citi Research

One way in which services form part of GVCs is if direct services exports are inputs to other countries' exports. In India's case, forward linkages are particularly high in its business services exports, given India's prominent role in global business service offshoring. There are no clear signs of waning competitiveness – India's services exports growth has rebounded sharply relative to rest of Asia (Figure 149). But India needs to be vigilant – advances in automation/AI could lead to increasingly less jobs being offshored. According to a study by AT Kearney, India's Business Processing Outsourcing (BPO) jobs are more vulnerable to automation than the Philippines as the former is more exposed to routine and structured work vs. less easy-to-automate customer service.<sup>9</sup>

## Analyzing the Interaction of the Services and Manufacturing GVCs

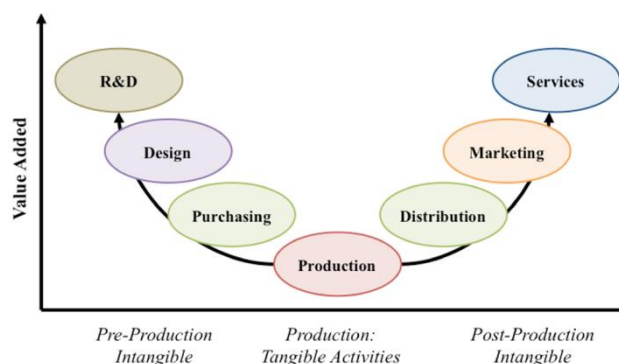
The other way in which India's services form an integral component of a global supply chain is its value added as an input to the export of goods, mostly manufactured goods. This can be illustrated in Figure 150 in what is now commonly called the "smile curve" of how the value added of a tradeable good is observed.<sup>10</sup> Anecdotal evidence suggests that value added is relatively high in the pre-production/upstream stage (R&D, design) and post production phase, while lower on the labor-intensive component usually outsourced to a developing country.

We find that while India's share of services value added of its gross exports is relatively high at 57.5%, above that of all its Asian peers except Singapore. This is largely due to the high share of direct service exports to total exports. When we look at India's services value added to its manufactured goods exports, it only accounts for about a third, similar to Malaysia and Mexico but lower than Brazil, Turkey, Taiwan, or the OECD average (~37%). Given India's greater specialization in services, this relatively low penetration of services value added to manufactured goods exports may reflect deficiencies in competitiveness in areas such as logistics, finance, R&D, and design services that accompany manufacturing processes.

<sup>9</sup> AT Kearney 2017 Global Services Location Index - The Widening Impact of Automation

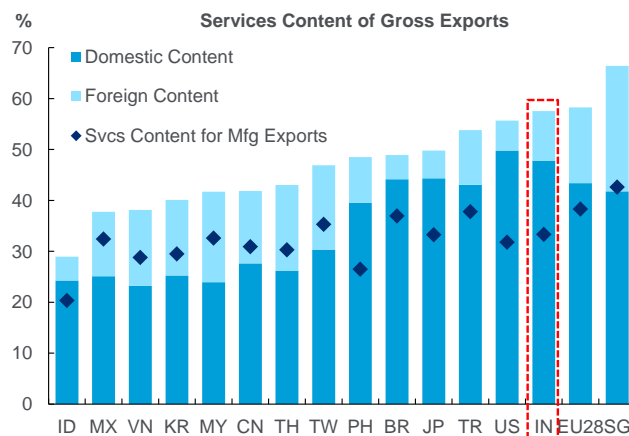
<sup>10</sup> See R. Baldwin, T. Ito and H. Sato, "Portrait of Factor Asia: Production Network in Asia and its Implication for Growth – The 'Smile Curve'". Joint research Program Series 169, IDE – JETRO (Chiba, Japan, 2014).

Figure 150. Value Added Stages of Production



Source: Fernandez-Stark, Frederick and Gereffi "The Apparel Global Value Chain", Center of Globalization, Governance and Competitiveness, Duke University (2010).

Figure 151. Services Share of Gross Exports – Domestic vs. Foreign Value Added (and Services Exports of Manufactured Exports), 2011

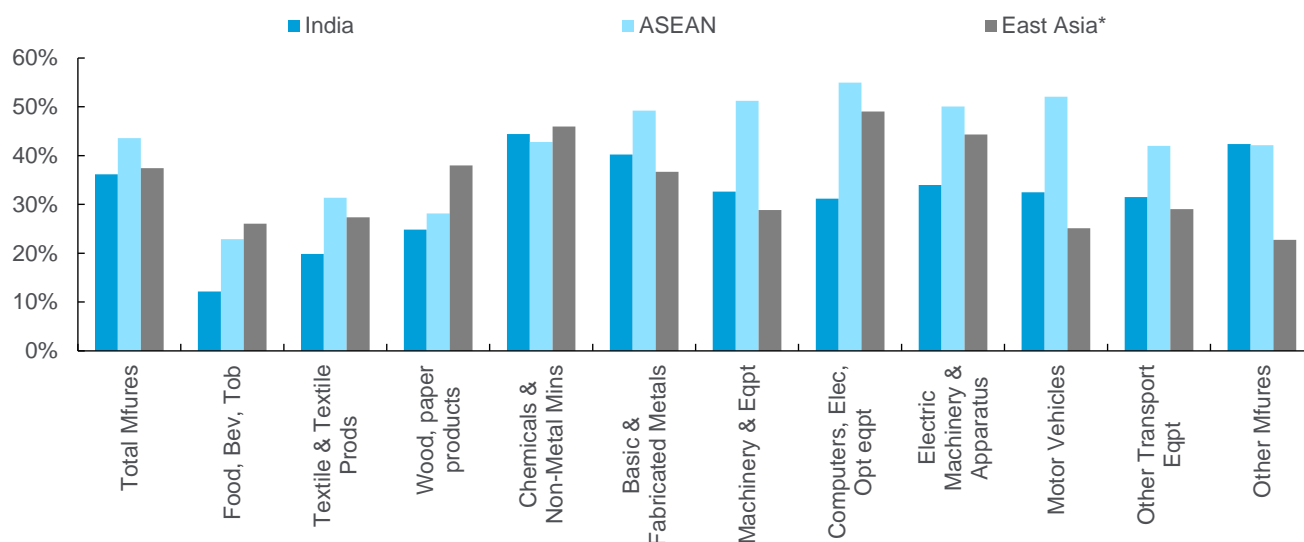


Source: OECD TiVA database

### A Sector-wise Analysis of India's GVC Participation

Meanwhile, India's manufacturing goods sector has a relatively low export orientation, and much of its supply chain linkage, as in other lower income developing countries, is through the sourcing of intermediate inputs or value added from abroad. However, India's degree of foreign value added (FVA) in its manufactured goods exports is relatively low vs. Asian peers (36% in India vs. 44% in ASEAN). One reason is India's much lower exposure to the computers/electronics industry relative to ASEAN and East Asia – the sector tends to have production that is highly segmented across borders. India may also be in either the more preliminary stage of production or completes the production cycle locally for some sectors like food & beverage, textiles, and electrical machinery & apparatus, as India has a much lower foreign value added component than its Asian peers.

Figure 152. Foreign Value Added Share in Gross Exports of Manufactured Goods, 2011



Source: OECD TiVA database; Note: \*China, Hong Kong, Japan, Korea and Taiwan



### How Will Greater GVC Participation Help India?

Assessing India's trends in GVC participation across both goods and services is important given its role in enhancing economic growth and creating jobs. Higher GVC participation enables the transfer of technology, skills, and best practices to the lower income economy, and therefore, eventually leading the latter to generate higher domestic value added in its exports. GVC participation can also increase a country's access to new foreign and product markets that may have been previously inaccessible, especially for small- and medium-sized companies that may have been shut off to global markets given prohibitively high transaction costs.

Empirical studies have been supportive of a positive relationship between GVC participation and economic growth. UNCTAD (2013) find that economies with a faster growing GVC participation rate also tend to have per capita GDP growth that is 2 percentage points above average. Moreover, GVC participation tends to lead to faster employment growth even if GVC participation depended more on imported contents of exports (backward linkages).<sup>11</sup> Thus, policies that facilitate India's greater integration to global supply chains should be encouraged through more supportive government trade and investment policies, enabling logistics and regulatory infrastructure, and policies that enhance the competitiveness and adaptive abilities of the local firms to seize opportunities that arise from GVCs.

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<sup>11</sup> UNCTAD, World Investment Report 2013: Global Value Chains: Investments and Trade for Development (New York and Geneva, United Nations, 2013).



## How Supportive Have Government Policies Been?

### India's FTAs: Boon or Bane?

India's Foreign Trade Policy (FTP) 2015–2020 tries to balance between supporting multilateral rule-based global trade (World Trade Organization variety) and special efforts to expand markets in new regions, i.e., through more free trade agreements (FTAs). By 2016 India's FTA's have almost doubled to 42 from mid-2004, though the pace has substantially reduced as policymakers have tried to reevaluate the welfare effects of these FTAs in recent times. Analysis of these FTAs seems to suggest that although overall trade has increased substantially with FTA partners, India's import growth from these countries has increased more than India's export growth. There could be several reasons behind this differential performance of imports and exports – India's initial import tariffs were higher, necessitating a bigger fall; India's domestic market size is much larger compared to the FTA country's market; and non-tariff barriers like technological and quality standards could also be hampering India's export growth to these countries.

However, there could be a positive effect on some sectors. The Economic Survey 2015-16 estimated that if India is able to draw up FTAs with the EU and the U.K. then incremental exports of apparel, leather goods, and footwear could be ~\$3 billion creating ~150,000 jobs in the process.

### Export Incentives

The primary vehicle of incentivizing exports under the new FTP has been the Merchandise Exports Incentive Scheme (MEIS) which provides 2-5% of export value as incentives, for almost 5,000 tariff line items. More recently the incentives have been further raised for labor-intensive products and the Micro, Small & Medium Enterprises (MSME) sector. However, the overall export subsidy for manufacturing products under this scheme has still been kept relatively small at less than 0.2% of the GDP. In addition, while there are implicit subsidies for agricultural products it is still fair to say that India has not followed a practice of promoting exports through active state intervention.

### Special Economic Zones and Coastal Employment Zones

India's Special Economic Zones (SEZ) policy was announced in April 2000, although the SEZ Act was not passed in the Parliament until 2005. There are 222 operational SEZ's in the country but this number is much lower than the 421 SEZ approvals already provided by the government. Firms operating in the SEZs enjoy different kinds of income tax exemptions, duty free imports, and improved ease of doing business. The attractiveness of SEZs led to the share of exports going out of these zones to increase to 28% today from 5% in FY06<sup>12</sup>. In the last four years this ratio has not changed much as some of the incentives have been withdrawn – fiscal concessions are now ~5% of total SEZ exports. With 57% of the SEZ units in information technology services, the benefits of manufacturing and employment growth have not been fully exploited and the SEZs have been able to create only 1.7 million jobs in the last 12 years, much lower than what could have been achieved if more labor intensive industries had come in.

<sup>12</sup> Note: India's fiscal year runs from April 1 to March 31. FY06 is the abbreviation for the fiscal year ending March 2006.

Figure 153. SEZs are Growing in Importance....

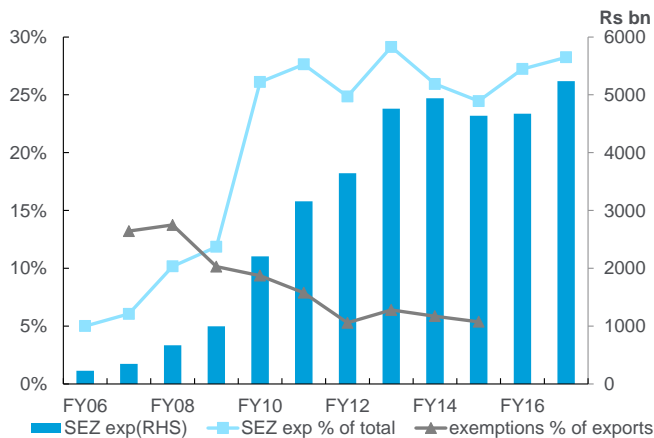
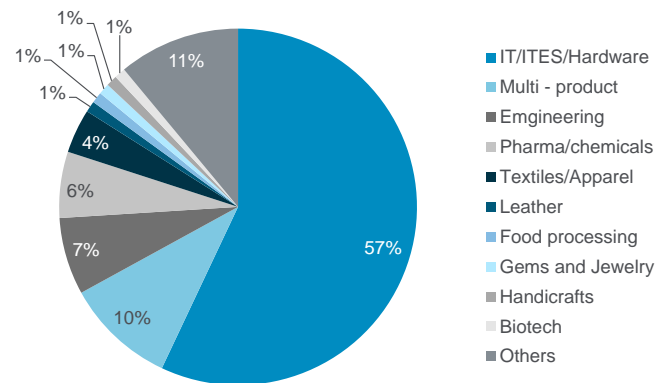
Source: <http://www.sezindia.nic.in/>, Citi Research

Figure 154. ...But Need to be More Diversified

Source: <http://www.sezindia.nic.in/>, Citi Research

Understanding the limitations of the SEZs, the Three Year Action Agenda of the government think tank Niti Aayog has proposed the creation of two Coastal Employment Zones (CEZs) (one on the eastern coast and one on the western) spread over 500 square kms each. The key difference in the concept of CEZs is that the tax-benefits would be linked to employment creation and the Niti Aayog proposes benefits to firms creating at least 10,000 jobs. The CEZs are also likely to have more relaxed labor regulations and the central government can make large investments in building infrastructure. The concept of CEZs will also fit into the “Bharatmala” (a centrally sponsored and funded road & highway project) and “Sagarmala” (port modernization) projects of the government and help in fostering an employment-intensive export-led growth strategy.

### Exchange Rate Policy

India has not followed a strategy of maintaining an undervalued currency to prop up exports. Empirical studies<sup>13</sup> have found that at a firm level, a one percentage point increase in real effective exchange rate (REER) appreciation leads to a 6.3% fall in export share of the firm compared to its total sales. Exchange rate volatility also has a negative impact on exports. At an aggregate level the impact of exchange rates on exports could be a little lower as a large part of India’s merchandise exports have substantial imported inputs and hence exchange rate becomes a pass-through for these products.

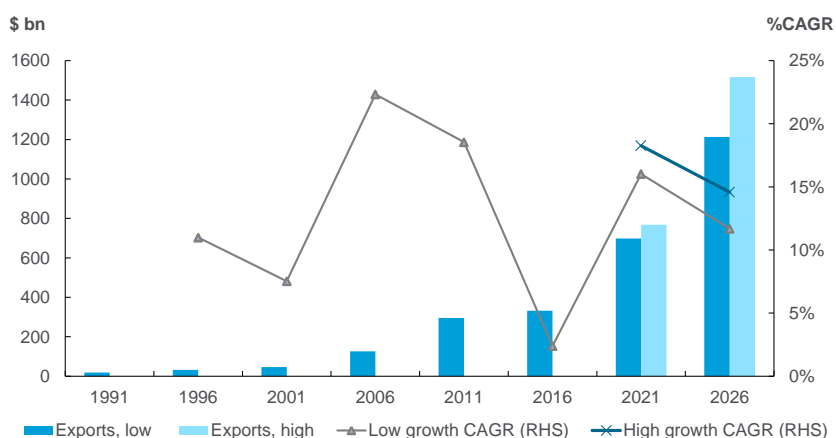
While the Reserve Bank of India (RBI) has consistently tried to minimize volatility in exchange rates by active intervention in the foreign exchange (FX) market, the exchange rate has often remained overvalued as measured by the 36-country trade-weighted REER. In part, this has happened because of constant capital inflows in a high-growth economy which counteracted the impulse to exchange rates from persistent trade deficits. This kind of ‘Dutch Disease’ phenomenon could be a headwind for exports unless corrected soon.

<sup>13</sup> Cheung and Sengupta, 2013 Impact of exchange rate movements on exports: An analysis of Indian non-financial sector firms

## Exploiting the Export Potential

The role of exports as a productivity driver and employment creator has meant that it could play a significant role in TFP growth and even investment growth. If India can increase its exports-to-GDP ratio (including service exports) back to at least 20%, then by 2021 India's exports could reach ~\$700 billion from ~\$350 billion now. This could be further doubled over the next five years if the exports-to-GDP ratio can be pushed up to 22% — our high export growth scenario. In our estimate the compound annual growth rate of exports required to achieve this is in the range of 12–18% which is not inconceivable given much higher growth rates achieved in the past.

Figure 155. Quantifying the Export Opportunity – The \$ 1.5 Trillion Pie



Source: RBI, CEIC, Citi Research

However, given the risks of rising global protectionism, this will not be an easy task. We suggest the following action points:

- Identifying the right balance between labor-intensive low-technology exports (apparel, leather, footwear) and capital- and innovation-intensive high-tech exports (auto, pharma, electronics), keeping in mind India's comparative advantage. This would require a narrowing down of the industries where fiscal support is extended.
- Immediate focus on developing the CEZs and reviving the SEZs.
- Improving product quality and complexity to be higher up on the value chain and improve scalability of exports by providing the right support to export-oriented MSMEs to grow bigger.
- Better product quality and an economy open to FDI inflows should help better integration with the global value chains.
- Creating 'Brand India' as part of the 'Make in India' campaign for better recall of Indian exports and for value creation.
- Fiscal incentives might be increased with greater focus and a prudent exchange rate policy should be followed which does not create an additional headwind for exports.
- Avoiding protectionist measures on the import side which could lead to retaliatory actions from India's trade partners. The inverted duty structure in certain sectors could be addressed though.

## Reforming Input Markets

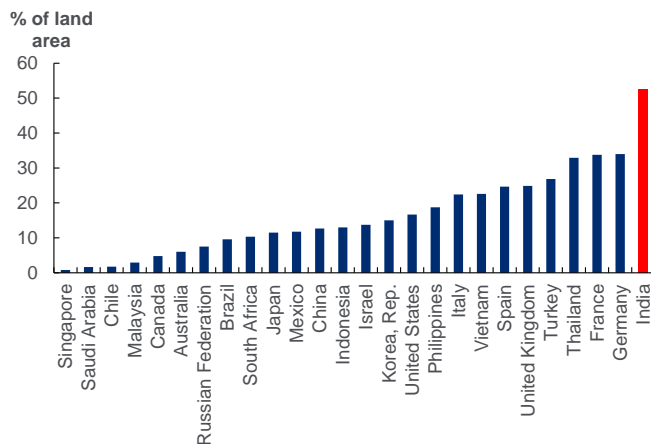
From 1991 onwards, India has taken significant steps in reforming output markets (dismantling the License Raj) and opening up the economy to trade and capital flows. However, the next generation reforms of the input (factor) markets have been rather tardy. The efficiency of factor markets such as land and labor is an important determinant for firms to gain productivity and stay competitive in a market economy. It will also help in formalization of the economy and addressing the jobs challenge. The political sensitivity and the constitutional framework which puts land and labor in the concurrent list with jurisdiction of both state and central governments make any reforms in input markets more challenging and rewarding at the same time.

### Land Market Reforms

#### Assessment of Current Situation

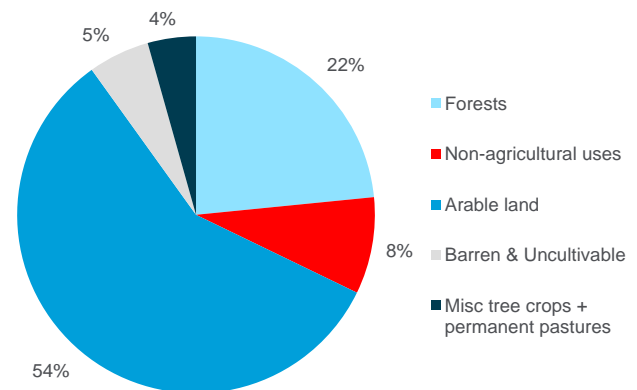
Little has changed since Adam Smith included land alongside labor and capital as one of the three factors of production essential to generate output. Land becomes more essential in the production process when the country looks to expand its manufacturing base and move away from low productivity agriculture sector. India with its 3.2 million square kilometers land area is world's seventh largest country by land area, but the land can still said to be scarce. The share of arable land in India is one of the highest in the world at more than half of total land mass. The proportion of land in non-agricultural usage such as buildings, roads, and railways, has remained low at 8% of total land area, up only marginally from 6% over last 25 years

Figure 156. Arable Land Share in India One of the Highest



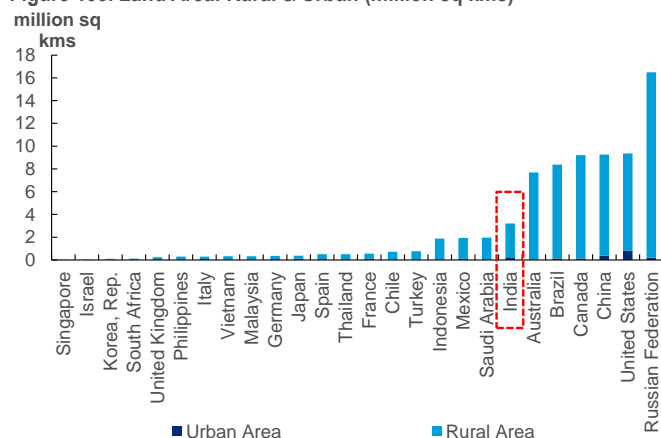
Source: World Bank, Citi Research

Figure 157. India - Use of Land Area (% of total)

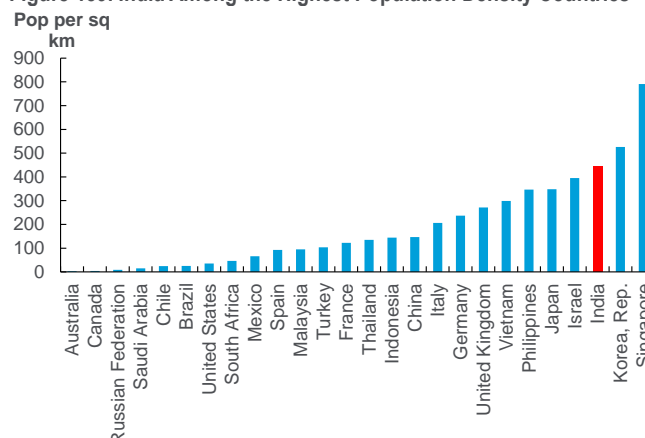


Source: Ministry of Agriculture, Citi Research

India is among the most densely populated country with around 445 people per square kilometer (only behind Singapore at 790 and Korea at 526). In comparison, the population density in the U.S. and China is 35 and 146, respectively. Clearly the proportion of urban land also needs to go up as rural to urban migration happens in the development process. Countries that have population density similar to India's level — namely Japan, Israel, and Korea — have roughly 27% of their land base as urban area, which compares with India's urban land base of only 7%.

**Figure 158. Land Area: Rural & Urban (million sq kms)**

Source: World Bank, Citi Research

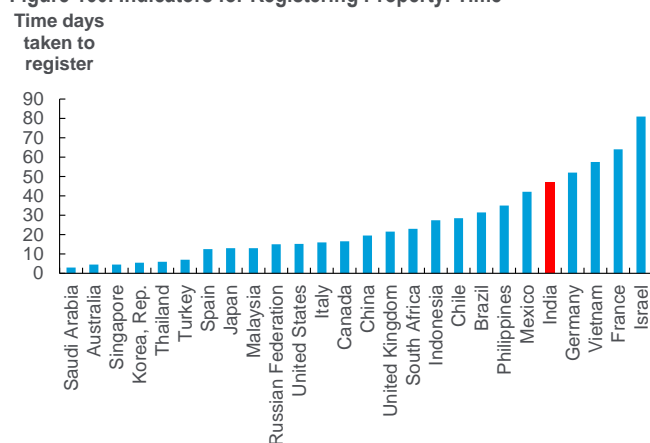
**Figure 159. India Among the Highest Population Density Countries**

Source: World Bank, Citi Research

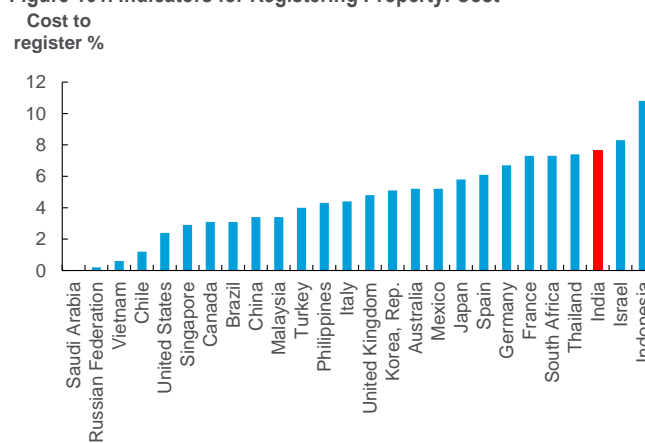
A McKinsey study pointed that land market distortions in India account for close to 1.3% of lost growth a year. These land distortions limit the land available for housing and retail, the largest domestic sectors outside agriculture. Among the distortions, the notable ones are unclear ownership (around 90% of land parcels are subject to legal disputes over their ownership) and taxation issues (low property tax, high stamp duty), among others. As India starts developing its infrastructure and manufacturing base, lack of land availability could become a binding bottleneck.

### Land Acquisition Hinders Output

The difficulties around land acquisition for industrial purpose become more apparent in the investment projects data from the Center for Monitoring Indian Economy (CMIE) which estimates that around a tenth of stalled investment projects (\$20 billion or 1% of GDP) in 2017 were due to land acquisition problems. Land prices are expensive relative to income levels in India. The ratio of land price per square meter to GDP per capita stood at 100-115 for New Delhi and Mumbai which compared with 6 in Sydney, 7 in Bangkok, 9 in Tokyo, and 12 in Singapore as per the McKinsey report. Even the price of agricultural land as per an EPW study<sup>14</sup> is higher than the average prices in Spain, France, and Germany.

**Figure 160. Indicators for Registering Property: Time**

Source: World Bank Ease of Doing Business, Citi Research

**Figure 161. Indicators for Registering Property: Cost**

Source: World Bank Ease of Doing Business Citi Research

<sup>14</sup> [https://sites.temple.edu/sanjay/files/2015/05/EPW-2013-A\\_New\\_Price\\_Regime.pdf](https://sites.temple.edu/sanjay/files/2015/05/EPW-2013-A_New_Price_Regime.pdf)

## Increased Efficiency of Land Markets: What Needs to be Done?

### Land Consolidation/Agriculture Productivity

India's agriculture land ownership is quite fragmented. As per the agriculture census 2010-11, around two-thirds of land owners are categorized as marginal with average land size of 0.4 hectares and another fifth are categorized as small with average land size of 1.4 hectares. Large land parcels with operating holdings above 20 hectares comprise less than 1% of the total. This clearly indicates a prevalence of subsistence farming in India with poor agriculture productivity. The consolidation of land holdings could enhance land productivity including from economies of scale. This could free up land for industrial and urban use.

**Figure 162. Land Holdings as per 2010/2011 Census**

	Number of land holdings	Number of land holdings (% share)	Operated Area (in '000 hectare.)	Average in hectare
Marginal	92826	67%	35908	0.39
Small	24779	18%	35244	1.42
Semi-Medium	13896	10%	37705	2.71
Medium	5875	4%	33828	5.76
Large	973	1%	16907	17.38
All Sizes	138348	100%	159592	1.15

Source: Census, Citi Research

### Easier and Quicker Acquisition by Industry

As regards the laws related to land acquisition, the United Progressive Alliance (UPA) government enacted a land acquisition bill in 2013 that created guidelines for generous compensation to landowners, and made it mandatory to conduct social impact assessments of such acquisitions and obtain consent of 70-80% of land owners where private projects were involved. Although the Bill safeguarded the interests of the landowners (often farmers), industry bodies felt that acquiring large tracts of contiguous land could be difficult.

**Figure 163. Improving Land Market Efficiency**

Measures	Details
Land Administration	Clear timelines, rationalized documentation and single-window clearance for infrastructure projects. Coordination with the government and across government levels has been improved.
Land Registry	Leverage digital technology such as the usage of GIS mapping and Aadhaar
Land Acquisition Law	The central government approved an ordinance bill in December 2014 to amend the land acquisition law making it easier to acquire land in five key sectors (security and defense, infrastructure, power and affordable housing). The Bill eliminated the requirements of 80% consent from affected landowners and of a social impact study. The ordinance was re-issued three times up to September 2015. As the Bill could not be passed by the Parliament, the central government has encouraged state governments to experiment land reform
Land Pooling by State governments	Several states have passed land reforms including the land pooling initiatives to provide easier access to industries e.g. Rajasthan, Gujarat, Maharashtra
RERA	The Real Estate Bill passed in 2016 aims to introduce transparency and accountability in the property market. It establishes state level regulatory authorities and state level tribunals.

Source: OECD, Citi Research

The subsequent attempt to amend land acquisition through ordinance by the Bharatiya Janata Party (BJP) government didn't succeed since the government didn't have a majority in the upper house of parliament. The ordinance was aimed at easing the consent and social impact assessment for defense, rural infrastructure, affordable housing, industrial corridors, and infrastructure including PPP projects where the government owns the land.

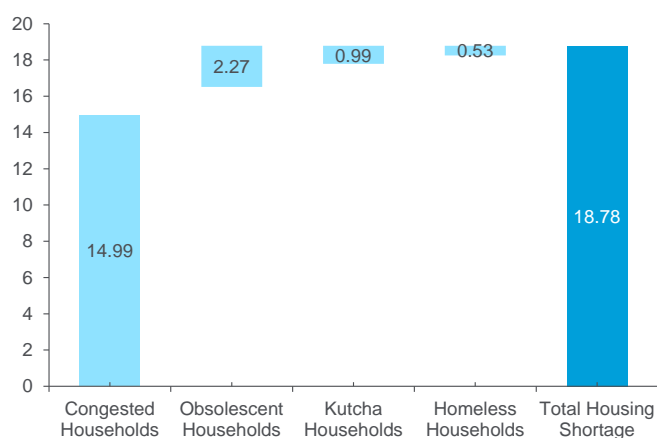
## States are Taking the Lead

However with land in the concurrent list of central and state government in the constitution, some state governments took the lead after obtaining the Presidential consent. Rajasthan passed legislation in 2016 to provide statutory support to land records and also passed a land pooling bill which facilitates aggregation and infrastructure development. Gujarat eliminated the requirement of a social impact assessment and consent clauses for certain types of development projects. Maharashtra allowed the sale of certain publicly-owned lands that were previously slated only for leasing and allowed mid-size plots to be divided. These attempts by different state governments to streamline the land acquisition process could in-principle be beneficial for attracting investment into the respective states. Furthermore, with BJP government's numbers increasing in the Upper house, the possibility of land acquisition reforms going through the Parliament could increase depending on the outcome of 2019 Lok Sabha elections.

## Utilizing Unused Government Land for Productive Purposes

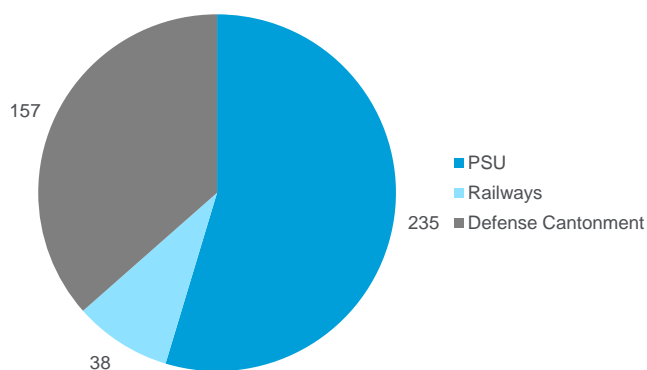
In an IIMA working paper,<sup>15</sup> the authors estimate that a significant portion of the land occupied by government bodies in India is underutilized and could be more productively utilized by creating affordable housing in the urban areas. The report estimates that 235,000 acres of surplus land are lying with Public Sector Undertakings (PSUs) and railways also have unused surplus land to the extent of 38,000 acres. Also, the Ministry of Defence has 157,000 acres notified as cantonment (military bases) which could be said to be under-utilized compared to the broader population density. A large chunk of the 16 million acres of military occupied land outside these notified areas could be under-utilized as well. As per recent reports, the government departments have been asked to identify unutilized land to help build a land bank to support affordable housing. In some cases, monetization of this surplus land could provide valuable fiscal resources to the government also, to be deployed for other social sector schemes. The Urban Development Ministry is also trying to identify land within developed government colonies as basic amenities already exist in such places.

Figure 164. Urban Housing Shortage in India (2012, Units in Millions)



Source: Citi Research, India Ministry of Housing & Urban Poverty Alleviation

Figure 165. Underutilized Land Base ('000 acres)



Source: Citi Research, IIMA Working paper

<sup>15</sup> <https://web.iima.ac.in/assets/snippets/workingpaperpdf/10030321622016-03-33.pdf>



## Reducing Transaction Costs

The easier and quicker land acquisition for industrial and infrastructure development would entail continued administrative efforts. Within administrative reforms, single window clearance, better center-state coordination, improved land registry, and technology adaptation such as Geographic Information System (GIS) mapping could be implemented. There have been continued efforts to improve the land registry through digitization of land records and GIS mapping of land related data, but these efforts need to be accelerated. Furthermore, there is a need for fast track litigation mechanisms to reduce the types of land-related conflicts discussed above. The streamlining of a property registration system and the reduction of stamp duty could also help improve India's World Bank Ease of Doing Business ranking.

## Increasing Transparency (RERA) + Goods & Service Tax (GST)

The implementation of a real estate regulatory authority in 2016 has been a key step towards bringing transparency and credibility to the real estate sector with stringent norms for pre-approvals and registration. With better compliance and reduced black money transactions, the land market could also become efficient and transparent. Furthermore, the rollout of a Goods & Service tax from July 2017 has also helped enhance transparency in the real estate and land market. The provision of a one-third abatement for land in the GST allows for better disclosure and facilitates better compliance. The shadow economy/black money aspect of the land market imposes cost for bona-fide purposes and hence improved transparency could reduce costs.

## Equity Should be Kept in Mind while Forming Regulations

The political considerations, sensitive nature of land, fragmented ownership, and agriculture dimensions makes any regulatory changes in the land market challenging. For guidance, two maxims are oft cited in public land acquisition, including in the India law commission report in 1958. *Salus populi est suprema lex* i.e., regard for public welfare is the highest law and *Necessitas publica major est quam private* i.e., public necessity is greater than private necessity. Within this broader framework the proper compensation and rehabilitation for the existing landowners should be considered while also facilitating ease of land acquisition for the infrastructure sector and industries. This will be a more sustainable long-term framework for a developing economy reducing the risks of disruptive socio-economic conflicts.

## Bottom Line – Pushing Land Productivity to its Frontier

The high land costs and difficulty to acquire land for industrial purposes in India reflect land scarcity, cost of regulatory failures, and hurdles/restrictions in land use. We believe that the government, both central as well as at the state levels, is keen to remove these hurdles to promote industrial and urban development. Given the relatively sluggish pace of investments, land does not appear to be one of the binding constraints, but as India embarks on a sustained 8% growth trajectory, land could become more critical. Hence it is important to create the right regulatory structure before the problem acquires larger proportion. Also with continued administrative and legislative reforms over the medium term, the wealth unlocked from the value of land could benefit every landowner in India. This can provide a much needed boost to consumption through the wealth effect of their landholdings.



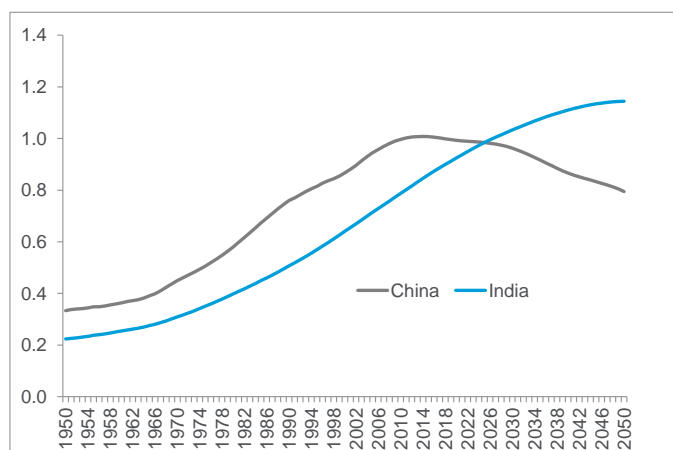
## Labor Market Reforms

### Demographic Trends

India with its 1.25 billion population enjoys a demographic advantage with the proportion of working age population over 50% and likely to increase further in the coming years. This contrasts with other emerging markets, particularly China, where the working age population is likely to shrink. Some of the highlights of India's demographics are as below:

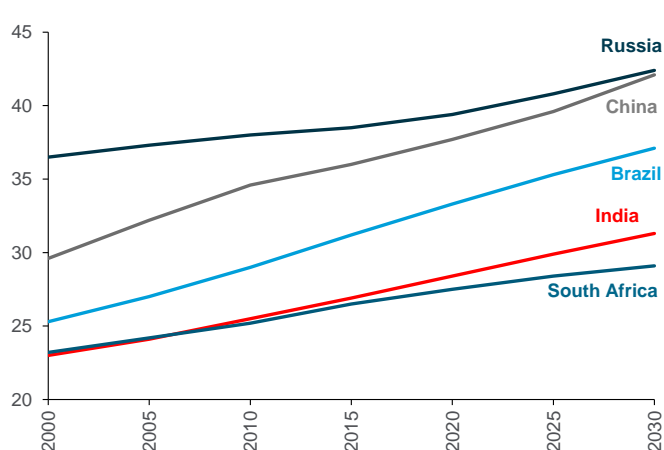
- An estimated growth in India's population at slightly over 1% annually for the next 10 years is expected to provide a boost to aggregate demand across products and services where the consumer penetration remains low.
- India's population remains largely young (median age <30 for another 10 years), suggesting low dependency ratio and high levels of savings in the economy.
- The UN population division data shows that India's working age population in the 15-64 age category stands at 860 million (more than twice the U.S. population) and given an annual growth at 1%+, the working age population in India is likely to overtake China's working age population in the next 10 years.

Figure 166. Working Age Population to Overtake that of China



Source: UN Population Division, Citi Research

Figure 167. Young Demographics – Median Age < 30 Until 2030



Source: UN Population Division, Citi Research

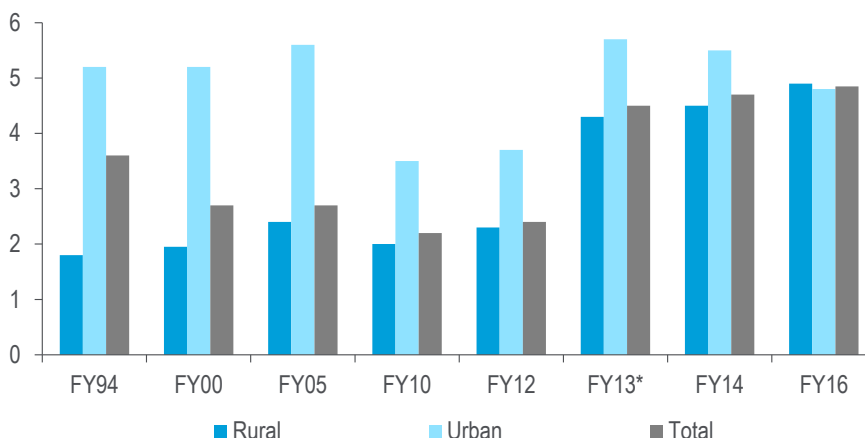
Given the addition of close to 13 million to the working age population annually (more than the population of Sweden), the expansion of the labor intensive manufacturing sector is crucial to realizing the demographic dividend. Ironically as Niti Aayog noted in its Three Year Action Agenda document, the labor-intensive sectors in India such as apparel, footwear, food processing, electronic goods, light consumer manufacturing, tourism, and construction have not performed as well as some of the capital-intensive or skilled labor-intensive sectors. Thus creating a labor market that is more productive and less rigid is both an imperative and a challenge.

### Assessment of Current Situation: Low Job Creation

While 1 million people are added to India's working age population every month, the rate of jobs creation was merely a million a year as per our estimate from EUS survey data for the period between FY12 and FY16. The unemployment rate reached 5% for the country in FY16, highest in the time series with a sharp increase in rural unemployment from 3.4% in FY12 to 5.1% in FY16.

The trends of poor job creation are further highlighted in a recent report<sup>16</sup> by ICRIER, where the author observes that total jobs declined from 480 million to 468 million between FY14 and FY16. The jobs in the private corporate manufacturing sector remained small at 13.4 million in 2014-15 and rose slowly to 14.1 million in 2016-17. Though there have also been reports regarding much stronger job additions based on new registration data from the Employees Provident Fund Organization (EPFO) and other data sets such as the Employees State Insurance Company (ESIC) and National Pension Scheme (NPS). However lack of historical time series and classification methodologies complicate the inferences at this point.

**Figure 168. High Rural Unemployment Pushes Up the Overall Unemployment Rate**



Source: NSSO, Labor Bureau, Planning Commission, Citi Research; \*Data from FY13 onwards is from Employment-Unemployment Survey of Labor Bureau, before that from NSSO survey

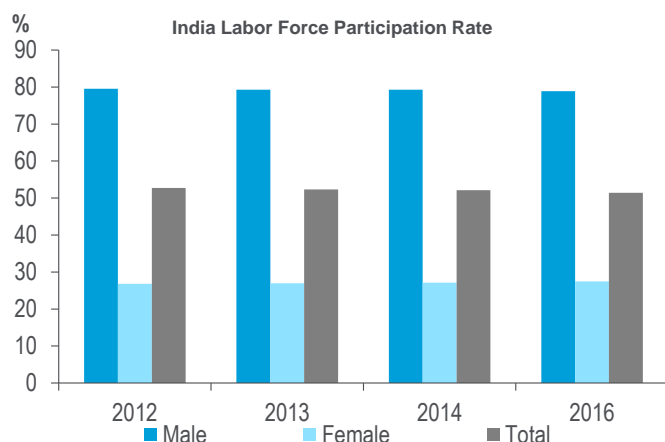
### Labor Force Participation Among Women Still Weak

The job environment is particularly worrisome for women. There are high female unemployment rates in both rural (7.8%) and urban (12.1%) areas. Rural unemployment rates for females are steadily rising while the urban female unemployment has been stubbornly above 12%. To complicate the situation, labor force participation rates for women were at an abysmally low level of 23.7% in FY16; for urban females it was even lower at 16.2%.

In global comparison, India's female labor force participation is second only to Saudi Arabia. Several explanations have been put forward to explain this phenomenon – increasing household income has reduced the need for women to work in a 'distress' scenario, mechanization in agriculture has made them redundant, there has been a fall in girl child labor as female education has improved, and often researchers refer to India's societal patterns and preferences.

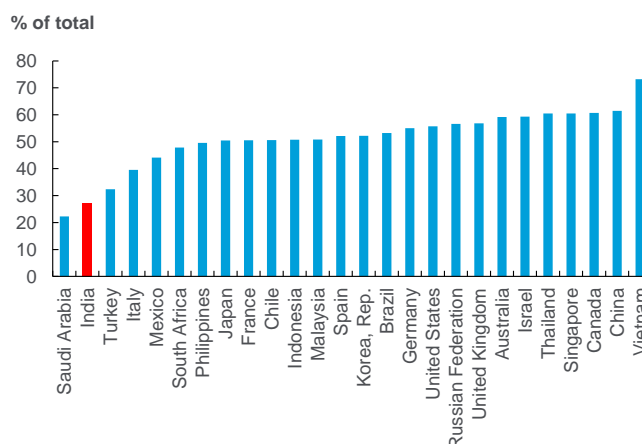
<sup>16</sup> [http://icrier.org/pdf/Working\\_Paper\\_348.pdf](http://icrier.org/pdf/Working_Paper_348.pdf)

Figure 169. Women Reluctant to Join the Labor Force



Source: Labor Bureau, Citi Research

Figure 170. Female Labor Participation Rate in Global Context

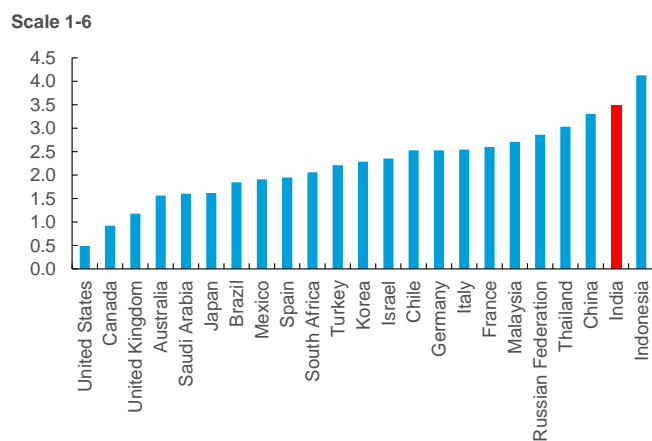


Source: World Bank, Citi Research

### Archaic Labor Laws

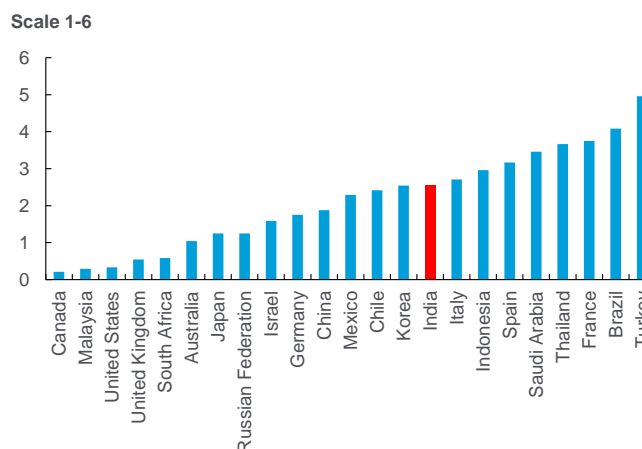
With around 44 central government laws (some British era) and several state laws, the regulatory compliance on labor laws has been onerous for employers. Also less flexibility to scale/restructure and other rigidities has pushed employers towards informal/contract employment. As per the OECD indicator “Strictness of Employment Protection” which measures general strictness of the labor market with respect to the process and costs involved in dismissing and hiring, India ranks among the most strict, but noticeably more in case of dismissing than on temporary hiring.

Figure 171. Protection of Permanent Workers Against (Individual) Dismissal



Source: OECD, Citi Research

Figure 172. Regulation on Temporary Forms of Employment



Source: OECD, Citi Research

Higher effective labor cost/sub-optimal labor productivity tends to impede on India's manufacturing growth. The issues around India's labor laws are summarized as:

- **Obsolete and onerous:** There are around 44 central government laws (some pre-independence British era) and several state laws related to labor (labor is a subject in the concurrent list of the Constitution where both center and states can legislate) which make compliance an onerous task for employers.

- **Promote under-employment:** Firms use of contractual employment allows them to escape the rigidities in the labor laws governing regular employment. This has led to a very high proportion of firms with sub-optimal firm size.
- **Lacking flexibility to restructure:** India's Industrial Disputes Act of 1947 requires companies employing more than 100 workers to seek government permission to retrench employees. Since this prevents employer from scaling down when the firm itself is in distress, it prevents them in scaling up in the first place.
- **Increases effective labor costs:** Despite wages being less than half those of China, the effective labor costs which include the cost of compliance may rise above Asian countries, preventing the expansion of labor-intensive industries to create new jobs.

### Labor Productivity has Much to Catch Up

As discussed earlier, labor productivity, defined as output per employed person, has grown in excess of 6% for the high GDP growth economies – in 75% of the cases GDP growth has exceeded 8% if labor productivity growth has been more than 6%. GDP growth mostly stays in the 5–8% range if labor productivity growth is a little lower, i.e., between 4 and 6%.

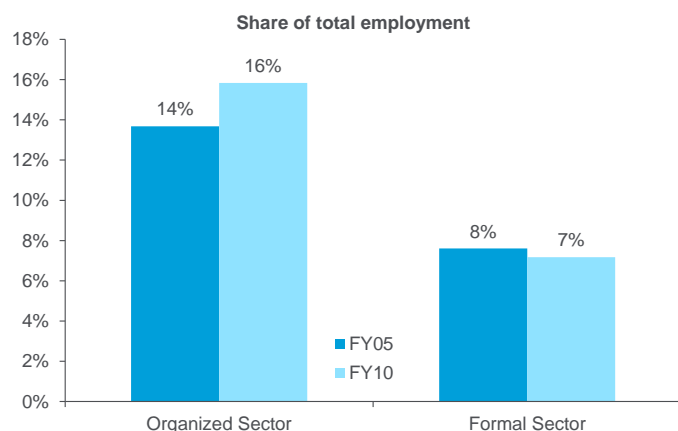
India's labor productivity growth averaged a dismal 1.7% in the 30 years between 1950 and 1980. It improved to an average of 3.8% in the next 20 years and shot up to an average of 8% between 2005 and 2011, which were India's best growth years. After that labor productivity growth has started decelerating and the 4.3% growth in 2017 is much lower than what is required to sustain GDP growth in excess of 8%. In comparison, China experienced strong growth in labor productivity after the 1980's through a mix of better capital deepening and higher TFP. Japan had two decades of average labor productivity growth of 8% in 1950's and 1960's. Post-war reconstruction efforts increased labor productivity in some of the European countries (Germany, Italy, Spain etc.) beyond the threshold of 6%. Some smaller countries like Israel and Saudi Arabia have also witnessed a couple of decades of average labor productivity growth beyond 6% in the 1950's and 1960's.

### High Employment in Low Productivity Sectors

For the 460 million that are employed (labor force participation rate of 53%), the labor market is considerably rigid. Besides, the labor market is segmented across sectors, occupations and gender. More than 90% of workers are employed in the informal sector with sub-par earnings and a relatively lower level of social protection.

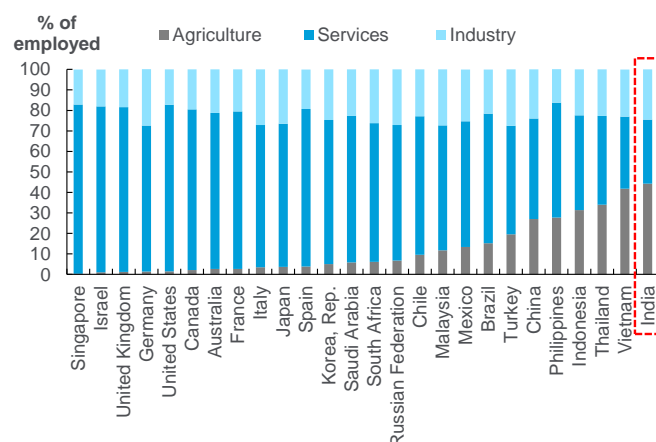
Roughly half of workers are engaged in the agriculture sector — contributing just 16.5% of GDP. As per the World Bank Development Indicator Database, this is the highest share of agriculture employment among the 26 countries in the database, including Vietnam, Thailand, Indonesia, Philippines. On the other hand, the industrial sector employed a quarter of the total work force, which is in line with global trends (average of 23%). But the share of services sector employment remains low at 31% compared to the global average of 65%.

Figure 173. Large Share of Informal Jobs in Total Employment



Source: Labor Bureau, Citi Research

Figure 174. Agriculture Employs 50% But Contributes Only 13% of GDP



Source: World Bank, Citi Research

### High Youth Unemployment: Education-Employability Disconnect

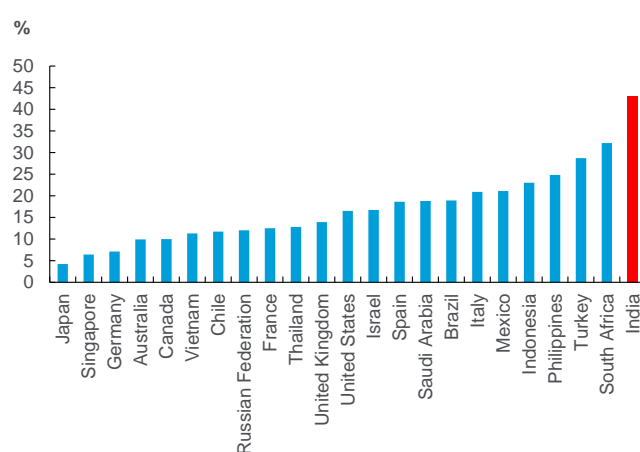
India's youth unemployment remains a key concern. As per the World Development Indicator database, the share of youth not in education, employment, or training is highest at 40% in India followed by other EMs like South Africa and Turkey. The unemployment rate of the younger 18-29 years population stood at 12.9%. On top of this high youth unemployment, ~60% of the unemployed graduates and post-graduates cited non-availability of jobs matching their education and experience as the reason for unemployment. Ironically, a World Economic Forum report<sup>17</sup> based on a Manpower group study claims that India ranks among the most difficult places to find workers with relevant skills. Around 60% of employers in India reported difficulties in filling jobs, including due to problems around language of instruction.

Figure 175. Addressing Youth Unemployment Is an Urgent Necessity

	15-17 years	18-29 years	30 years & above
Labor force Participation Rate	10.7	49	59.7
Unemployment Rate	17.5	12.9	1.4
Male	16.4	11.3	0.9
Female	21.3	18.2	3.1
Share working in Agriculture	52.6	38.5	48.5
Share working in Construction	16.7	14.7	10

Source: Labor Bureau, Citi Research

Figure 176. Share of Youth Not in Education, Employment, or Training Total (% of Youth Population)



Source: World Bank, Citi Research

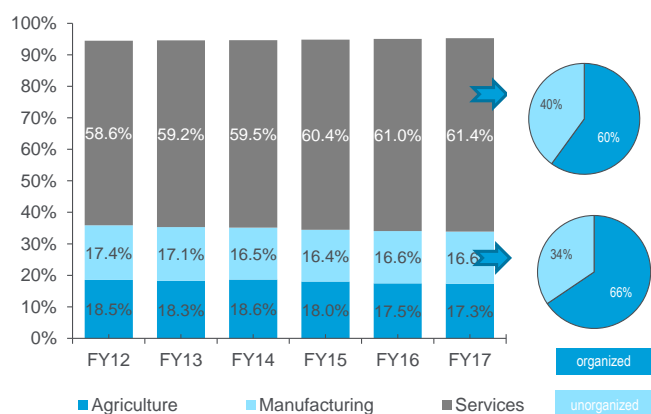
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[http://www3.weforum.org/docs/GAC/2014/WEF\\_GAC\\_Employment\\_MatchingSkillsLabourMarket\\_Report\\_2014.pdf](http://www3.weforum.org/docs/GAC/2014/WEF_GAC_Employment_MatchingSkillsLabourMarket_Report_2014.pdf)

## Formal vs. Informal/Permanent vs. Contract

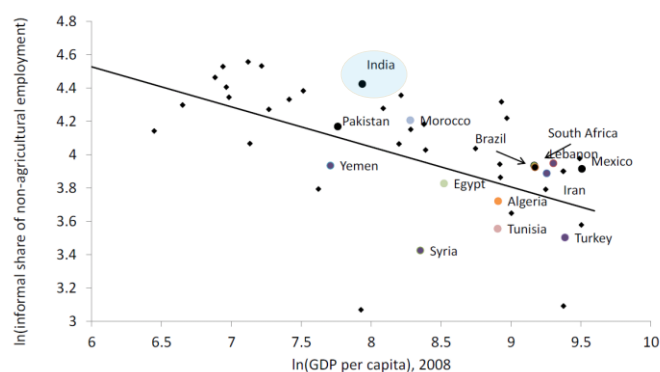
The unorganized sector in India accounts for roughly half of India's GDP but its share of employment is more than two-thirds. As discussed earlier, India's vast informal economy of unincorporated enterprises are usually out of the tax net, have low productivity, low access to formal credit, are largely unregulated, and where workers don't come under the purview of labor protection laws.

Figure 177. Share of Unorganized Across Three Sectors in GDP



Source: National Accounting Statistics, NCEUIS, Citi Research Estimates

Figure 178. India: Share of Informal Employment in India is High, Even Considering its Stage of Economic Development



Source: OECD, World Bank, Citi Research See The Extraordinary Persistence of India's Unorganized Sector

While tough labor laws and a myriad of regulations make it difficult for formal enterprises to start/do business, they also contribute in creating small informal enterprises that circumvent tough laws. It also creates a ground for increased self-employment initiatives aided in part by the government's Mudra credit schemes among others. An implication of the vast share of informal/unorganized sector/self-employment is that economies of scale are not as pronounced as in the West or China, leading to weaker productive efficiencies, higher costs, and lower competitiveness.

## Consequence - Rigid Labor Market a Growth Impediment

India has not been able to realize the full potential of its favorable demographics (addition of 13 million to working age population every year) as its labor market remains inefficient (marred by under-employment, low female participation, informal/low productivity jobs, and education-skill mismatch) and reasonably rigid (hiring/firing restrictions, archaic labor laws, high political sensitivity). On the demand side, the sub-par growth in labor-intensive industries has also been an impediment for job creation and economic growth. As India looks to push its labor productivity growth from the current level of 4.0-4.5% to the frontier of 6%+ growth, we look for the several thrust areas and policy support.

## Way Forward on Employment

### Revival of Construction Sector Holds the Key

As India crosses its Lewisian Turning Point and there is migration from the agriculture sector towards non-agriculture sectors, the first stepping stone could be in construction which is a relatively less skill-intensive sector. In the FY05–FY12 period 52 million non-agricultural jobs were created (including subsidiary jobs), reflecting the high growth and transformation of the economy.

Almost half of these non-agricultural jobs were created in the construction sector, though the sector accounted for only 20% of the non-agriculture workforce. In fact, construction jobs doubled in seven years after 2004-05. One of the reasons why job conditions failed to improve between FY12 and FY16 was the lackluster performance of the construction sector. The current government's push for affordable housing, rural and urban infrastructure coupled with improved credit conditions (low interest rates, bank recapitalization) could be a catalyst for the construction sector in the near term. That said the increased level of mechanization and technological advances in construction could be a headwind for the absorption of labor force.

**Figure 179. Construction Has Taken the Burden of Job Creation**

in mn	Share of non-agri jobs in FY12	Absolute change in employment (in mn)			Share of non-agri jobs FY05-12
		FY00 - 05	FY05-10	FY10-12	
<b>Manufacturing</b>	<b>25%</b>	<b>11.1</b>	<b>-3.2</b>	<b>9.1</b>	<b>11%</b>
o/w textiles and apparels	8%	6.8	-1.2	3.1	4%
machinery & metal	3%	0.2	0.6	0.3	2%
furniture	3%	1.3	-0.1	2.3	4%
food products	3%	-0.3	0	0.9	2%
<b>Non - manufacturing</b>	<b>23%</b>	<b>9</b>	<b>18.9</b>	<b>7</b>	<b>50%</b>
o/w construction	<b>21%</b>	<b>8.5</b>	<b>18.5</b>	<b>6.2</b>	<b>48%</b>
<b>Services</b>	<b>53%</b>	<b>17.5</b>	<b>9</b>	<b>11</b>	<b>39%</b>
o/w trade	18%	6.4	2.3	0.7	6%
transport & comm	9%	3.6	2.4	2.9	10%
education	6%	2.9	0.7	2.3	6%
hotels	3%	1.4	0.3	1.7	4%
<b>Total non-agricultural</b>		<b>37.6</b>	<b>24.7</b>	<b>27.1</b>	

Source: Planning Commission, Citi Research

### Mass Services Such as Travel and Tourism

While the manufacturing sector has been responsible for large scale job creation during the industrialization phase, the opportunity in the services sector can also be immense. Niti Aayog in its Three Year Action Agenda noted that the hospitality, travel and tourism sector is a major driver of growth and employment worldwide and especially in India where it made up 6.7% of the GDP in 2014.

In comparison, a World Travel and Tourism Council report estimated that tourism contributed 14% of GDP in Malaysia (directly and indirectly) and supported 12% of direct and indirect employment. For Thailand, the total direct and indirect contribution of the tourism sector was even higher at 21% of GDP and the contribution to employment was 15% of total employment.

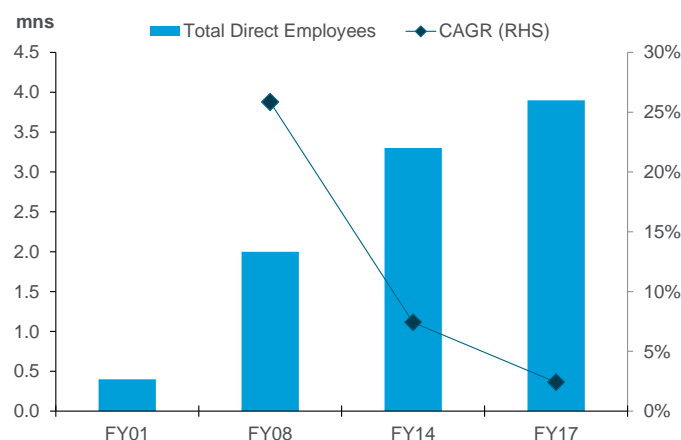
India is host to 35 World Heritage sites, 10 bio-geographical zones, and 26 biotic provinces, and therefore presents a strong tourism opportunity for foreign tourists. It can create jobs for less-skilled and according to Niti Aayog, it can act as a gateway to formal sector employment. Some of the recommendations to make India tourist hub included: (1) simplified tourist and conference visas including efficient usage of e-tourist visas; (2) development of beach destinations as tourism zones with participation of private sector in the lines of Bali, Sentosa, Antalya;

(3) development of ten islands into global destinations e.g., Lakshadweep and Andaman Islands; (4) marketing activity in the lines of "Brand USA"; and (5) skill development with dedicated universities

## New Economy: IT, e-Commerce and Automation

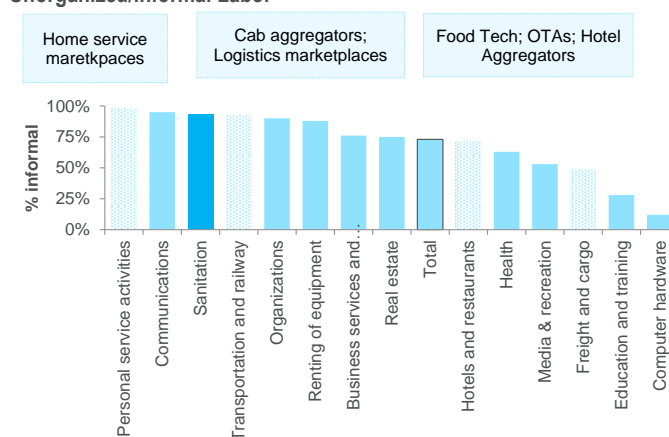
With smartphones ushering in a new era of a mobile connected workforce, our strategists note that new business models are emerging and entering into hitherto informal/unorganized sectors of the economy. Digital access is exploding in India – digital transactions, e-Commerce penetration, and online media consumption growth should create new job opportunities in areas that may not even exist yet. The Federation of Indian Chambers of Commerce & Industry (FICCI), NASSCOM and EY in a study estimate that by 2022, 37% of the Indian workforce would be employed in new job roles that do not exist today – the bulk of these being in IT, Financial Services, and the Automotive sector. Cab aggregators such as Uber and Ola have 700,000 vehicles in operation vs 300,000 in 2015. As per McKinsey, the e-Commerce employees have grown from 20,000 in 2012 to 100,000 currently. India has among the largest number of start-ups in the world behind the U.S. and China. Clearly the new economy and digital landscape could continue to support new job creation.

Figure 180. Hiring in IT Slowing



Source: NASSCOM, Citi Research

Figure 181. Several New Business Models Emerging, Powered by Smartphone and Connectivity, in Sectors with High Degree of Unorganized/Informal Labor



Source: NSSO, Citi Research

## Potential of Mudra – Entrepreneurship Development

The role of entrepreneurship in job creation can never be overstated. The entrepreneurial small businesses tend to be flexible, competitive and disruptive, and capable of creating jobs. Yet in *Reshaping Tomorrow – Is South Asia ready for the Big Leap*, the author Ejaj Ghani observes that India has too few entrepreneurs at its stage of development vs. its South East Asian counterparts. The author notes that in states which spawned more new establishments (e.g., Goa, Tamil Nadu, Punjab), the job creation was relatively faster. The government's Mudra initiative is therefore laudable. Under the scheme, small enterprises could access funding for credit needs below Rs1 million (\$15k). Around 75 million of small businesses accessed the scheme during the two years of its existence. Though much of these could have been self-employment/micro enterprises, as an ICRIER study finds that average loan size of these accounts was only Rs44,000 (\$685). i.e., even lower than average annual emolument in non-agricultural enterprises in a rural area. Yet the potential of Mudra program remains strong for job creation going forward.



**Figure 182. Mudra Scheme and the Filip to Entrepreneurship**

Category	2015-16			2016-17		
	Number of accounts (million)	Sanctioned amount (bn)	Disbursement amount (bn)	Number of accounts	Sanctioned amount	Disbursement amount
Total	34.8	1374	1330	39.7	1805	1753
New Accounts/Entrepreneurs	12.5	616	589	10.0	730	700

Source: Waiting for Jobs (Radhicka Kapoor) ICRIER, Citi Research

### Focus on Exports-Driven Job Creation

As discussed earlier, in addition to SEZs that have been able to create 1.7 million jobs in the last 12 years, the Three year Action Agenda of the Niti Aayog has proposed the creation of two Coastal Employment Zones (CEZs) (one on the eastern coast and one on the western), spread over 500 square kms each. The key difference in the concept of CEZs is that the tax-benefits would be linked to employment creation and the Niti Aayog proposes benefits to firms creating at least 10,000 jobs. The CEZs are also likely to have more relaxed labor regulations and the central government can make large investments in building infrastructure. The concept of CEZs will also fit into the “Bharatmala” and “Sagarmala” projects of the government and help in fostering an employment intensive export-led growth.

Furthermore, a continued thrust on foreign trade agreements (FTA) could have positive impacts on job creation. The Economic Survey 2015-16 estimated that if India is able to draw up free trade agreements with EU and the U.K. then incremental exports of apparel, leather goods and footwear could be ~ \$3 billion creating ~150,000 jobs in the process.

### Broad Contours of Labor Reform

The government is in the process of consolidating 44 labor laws under four codes – social security, wages, industrial relations, and safety, health and working conditions. Except for the last one, the government has already proposed a draft code for others. If implemented, these changes are likely to improve the ease of doing business substantially.

- **Code on wages:** All workers will be entitled to a universal minimum wage. Definition of wages would be streamlined by combining four wage-related laws of different vintage which creates about six different definitions of wages now.
- **Code on Industrial Relations:** The code on industrial relations was introduced in 2015 itself which proposed to amalgamate three central labor laws – the Trade Unions Act, 1926, the Industrial Employment Act, 1946, and the Industrial Disputes Act, 1947. Under this, government permission for lay-offs would not be required for firms employing up to 300 workers (at present the limit is 100 workers).
- **Code on Social Security:** Tries to simplify under one code all the laws regarding social security like the Employees Provident Fund Act, the Employees State Insurance Act, and the Maternity Benefit Act. The code covers employees and non-employees including domestic workers, farm workers, self-employed etc. At present most of the social security benefits are applicable only for 8% of the workforce in the organized sector.

Furthermore, given the political sensitivity around labor reforms, the government's approach so far has been to encourage states to make the difficult/contentious amendments since labor is in the Constitution's concurrent list. Over last two years, there has been some progress on labor reforms at the state levels, e.g., Rajasthan, and Madhya Pradesh. Some of the major changes made by Rajasthan to its labor laws include relaxation on laws governing retrenchment (permission for worker retrenchment needed if factory has >300 workers vs. 100 earlier) and stringent norms for the formation of trade unions (trade unions can be formed only if they represent >30% of workers vs. earlier 15%). The central government has also done some executive reforms, such as instituting the portal "Shram Suvidha" that allows firms to comply with 16 central labor laws through self-certification using a single-window facility.

### **Labor Reforms and Job Creation Essential to Push the Productivity Frontier**

The measures to remove the rigidity in labor market (codifying labor laws, state-center coordination), enhanced focus on labor intensive green field sectors (mass services such as travel and tourism, coastal economic zones), promoting small businesses and entrepreneurship (Mudra etc.), and revival of construction will go a long way in enhancing the labor productivity. The concerted focus on inclusion of women in labor force and bridging of the education-employment gap for youth could provide a fillip to the labor market and the economy more broadly. Besides the continued thrust on formalization (through governance), the easing of labor laws will likely create firms with optimal size and scale of production, in turn creating well-paying jobs and reducing underemployment. We think that labor productivity in India could climb to the frontier of 6%+ from current levels of 4-4.5%, thus creating the conditions for an 8%+ sustainable growth over medium term.

The creation of well-paying jobs is the only way to realize the demographic dividend in an equitable manner. It is also a political imperative given the democratic structure and the aspirational youth population.

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# Radical Productivity Enhancers

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## Radical Productivity Enhancers

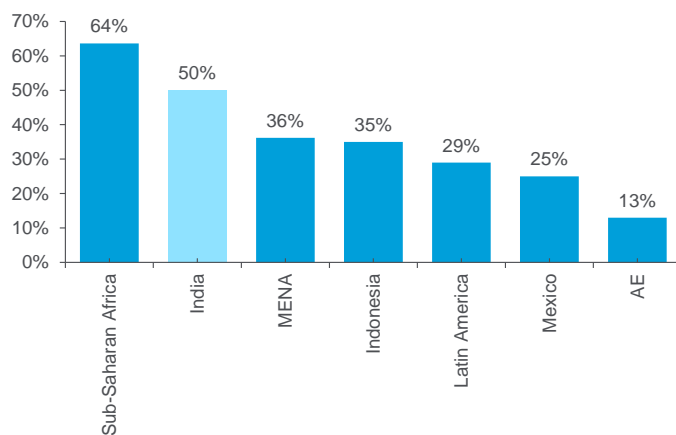
While traditional growth drivers have been favorable for India, a discrete TFP growth (say from 1.5 to 3) might require help from some rather disruptive but radical productive enhancers. Innovative and disruptive technologies are rapidly reshaping product and factor markets globally. We consider the possibility that a radical push to productivity could come from India's ability to scale up technological capabilities in digital finance, commerce, governance among others. On the other hand, the ongoing efforts to create 'one nation, one market' through the introduction of a uniform Goods & Services Tax (GST) could have non-linear productivity implications. Technology adoption, GST introduction and other reforms are also pushing the economy towards more formalization. We analyze how formalization of the economy can by itself generate higher productivity.

## Formalization of the Economy

Economic development is typically characterized by a transition from an agrarian to an industrial economy but also by a rise in productivity of the non-agricultural economy through deployment of new technologies, achievement of economies of scale, and efficient allocation of resources. While India has reduced its reliance on agriculture, it has had less success in absorbing the excess agricultural labor into formal/organized enterprises. Instead, surplus labor has been largely absorbed in India's vast informal/unorganized economy. This has had implications on income growth and distribution, productivity, and growth potential of the economy. For its size and stage of development, the Indian economy is significantly unorganized and informal. Around 92% of the employment is in informal sectors and ~50% of GDP comes from the unorganized sector, a factor that has been a drag not only on productivity and growth but also on government finances and labor welfare.

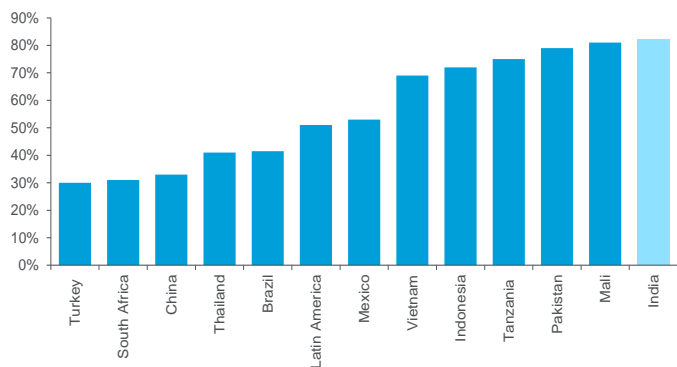
India's economy has registered a real GDP growth compound annual growth rate of >7% since FY00 but the share of unorganized economy in the GDP and informal employment in the overall employment base has remained quite persistent, declining only marginally during this period.

**Figure 183. Share of Shadow/Informal Economies Across the World (% GDP)**



Source: The Informal Economy Worldwide: trends and characteristics (Jacques Charmes), Shadow Economies in Highly Developed OECD countries

**Figure 184. India Has One of the Highest Informal Sector Employment Rates in the World**



Source: WECO, Citi Research

### But is Informality Somewhat Overstated in India?

However, recent data from the Economic Survey 2017-2018 suggests that the extent of informality might be somewhat overstated. The Survey employs two alternative definitions of formal employment – are the firms registered under the Employees Provident Fund Organization (EPFO) and Employees' State Insurance Scheme (ESIC) and/or are registered in the GST system. According to the survey estimates, 31% of the non-agricultural workforce has become formal if the social security definition is adopted, while the formalization ratio increases to 54% if the tax registration definition is chosen. Having said that, only 1% of the firms are registered for both EPFO and GST demonstrating that the battle for formalization is far from over.

**Figure 185. New Estimates of Formalization of the Labor Force**

		Enrolled in EPFO/ESIC			Employees (mn)		
		Number of firms (lakh)					
		Yes	No	Total	Yes	No	Total
Registered under GST	Yes	4	88.3	92.3	45	67	112
	No	0.9	619.8	620.6	15	92	108
	Total	4.9	708.1	712.9	60	159	220
		% of firms			% of employees		
Registered under GST	Yes	1%	12%	13%	20%	30%	51%
	No	0%	87%	87%	7%	42%	49%
	Total	1%	99%	100%	27%	72%	100%

Source: Economic Survey 2017-18, Citi Research

### Why Does India Have Such a Large Informal Economy

The informal sector may partly be a relic of India's legacy pre-reform license regime which tightly controlled production and restricted growth. Studies suggest that key drivers of their continued persistence may be: (1) excess surplus workforce; (2) trade/industrial policies that continue to make it tough to compete; (3) high tax regime; and (4) labor regulations/compliance costs. These drivers have not only allowed informal/unorganized sector compete against the formal but in a number of industries have created extensive linkages between the formal sector and the informal sector — for example via contract labor — that reinforce the informal sector.

Small enterprises (<10 workers) thus remain the dominant force in India in terms of employment share as well as number of businesses. While small enterprises also constitute >99% of the U.S.'s enterprise count, the employment share in such firms is considerably higher in India and the data suggests that such micro-enterprises continue to grow.

### Informal Sector Absorbs Surplus Workforce Spilling Out of Agriculture

As agricultural productivity improves, surplus labor migrates out of the sector into rural non-agricultural sectors or to urban areas – where, partly a dearth of employable skills in the manufacturing/services industry and partly a lack of availability of formal sector jobs, forces most labor into informal jobs in services sectors like construction, trade, and household services.

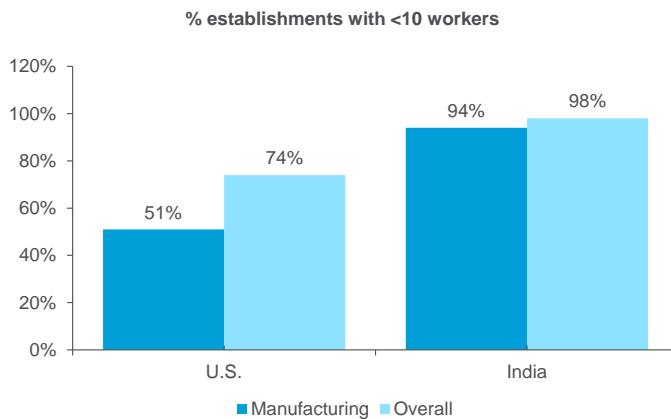
## Lower Wages and Lack of Worker Protections Keep Costs Lower

Informal workers don't get benefits – as per a Bureau of Labor Statistics (BLS) analysis, labor benefits excluding direct pay (contribution to provident fund and other benefits etc.) constitute ~20-30% of total compensation in formal/regular jobs. Even within organized sector, total pay for contract workers in the organized sector can be as low as ~50-60% of the pay for regular workers in the same job.

## Lower Cost of Compliance with the Regulatory Regime

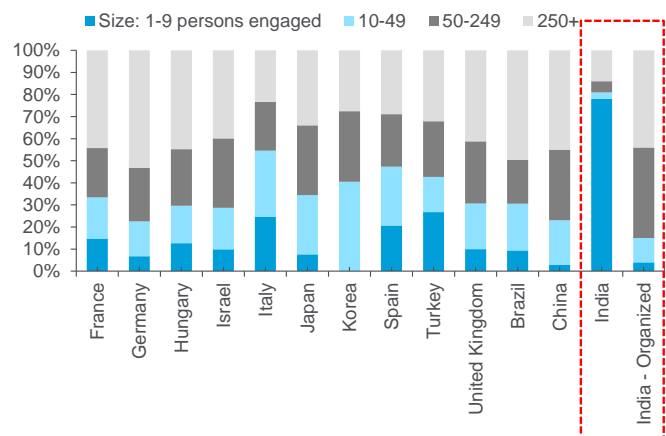
The informal sector has thrived because while labor regulations have made formal labor markets 'inflexible', unit labor markets in the informal sector are perhaps low enough such that labor is not replaced with capital/technology to get around the inflexible labor laws and still grow. Academic research shows that in India, labor regulations increase firms' unit labor costs by 35% in India, creating a strong incentive for firms to stay small (See: [Labor regulations and the cost of corruption](#)).

Figure 186. Indian Establishments are Overwhelmingly Small



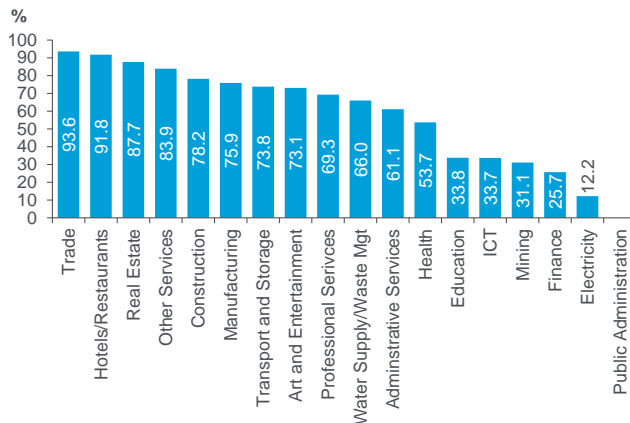
Source: 6th Economic Census (2013), Federal Reserve, Citi Research

Figure 187. Internal Comparison of Distribution of Firm Size in Manufacturing Sector (% of Persons Employed)



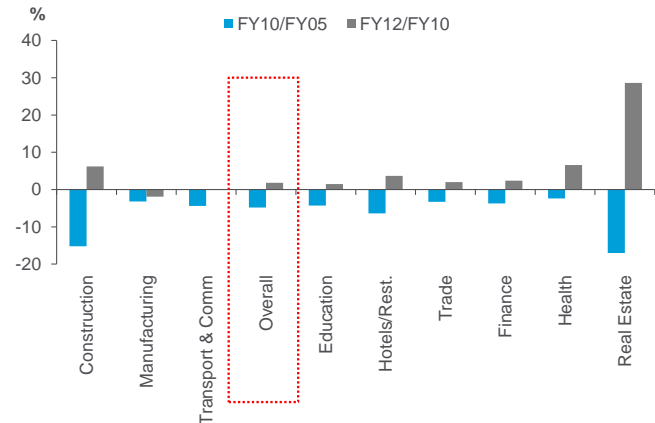
Source: OECD Structural Business Statistics, ASI (2014-15), 6th Economic Census (2013), Citi Research

Figure 188. Trade and Hotels/Restaurants Have the Highest Share of Informal Workers (FY12)



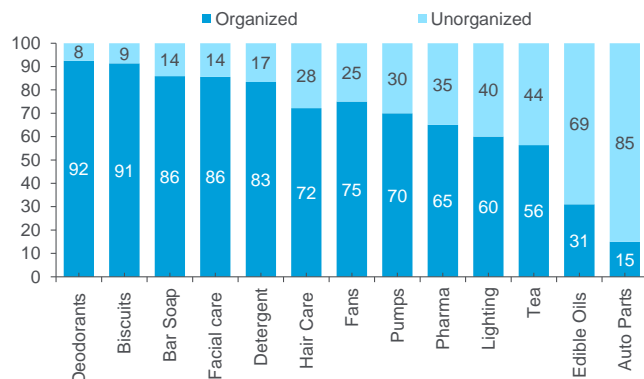
Source: 68th Round NSS Survey (FY12), Citi Research

Figure 189. Change in Share of Informal Employment Hasn't Been Structural; It Has Been Cyclical



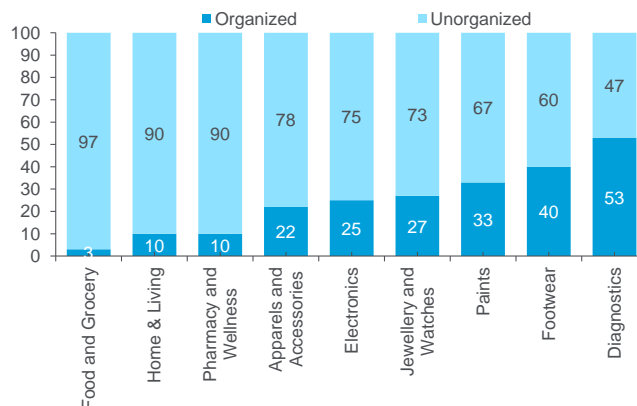
Source: 61st, 66th, and 68th Round of NSS Survey, Citi Research

Figure 190. Share of Organized in Various Consumption Verticals



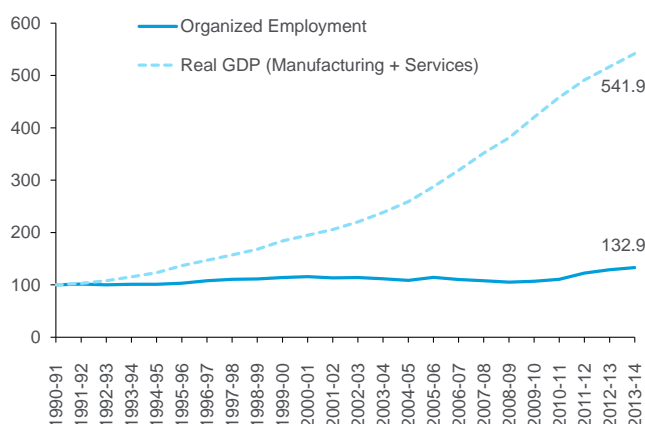
Source: Euromonitor, AIOCD, CGCEL, ACMA, TechSci Research, Citi Research Estimates, Citi Research

Figure 191. Share of Organized Retail Across Segments



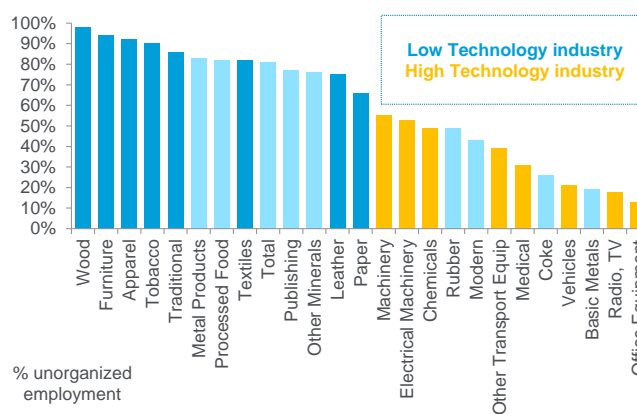
Source: D'Mart Prospectus sourcing Technopak (as of FY16), CRISIL Research

Figure 192. Organized Sector Employment Growth has been Anemic Despite Real GDP Growth



Note: organized employment includes public sector + organized private sector and includes contract employment  
Source: RBI, ASI Citi Research

Figure 193. Share of Unorganized Sector is Particularly High in Employment in Manufacturing Industries with Comparatively Lower Technology Input



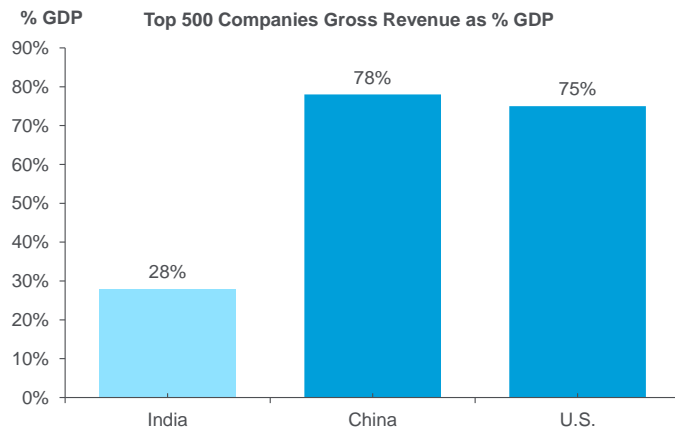
Source: NSSO, Citi Research

## Consequence: Lower Economies of Scale/Productivity

The organized sector in India is significantly more productive than the unorganized sector and the productivity is higher in cases of larger enterprises vs smaller ones. Despite their lack of technology, low productivity, lack of scale and quality, the informal sector share of India's GDP has declined only very gradually over the past 20 years.

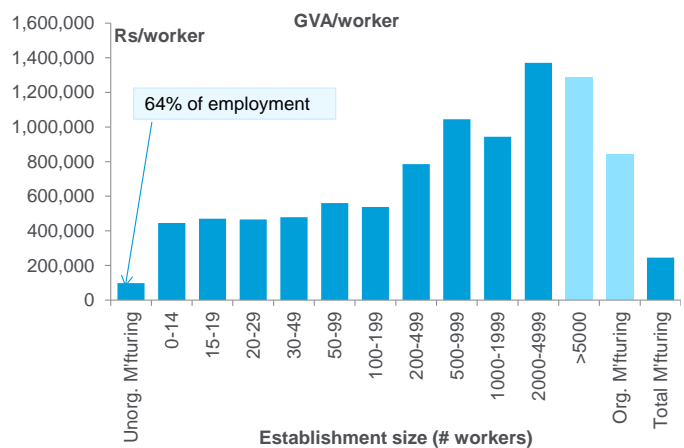
India gets considerably lesser gains from economies of scale than many other countries. While larger establishments in India are significantly more productive (and the productivity gap is widening), the small firms persist and continue to account for nearly a third of India's manufacturing output. India doesn't have massive-scale manufacturing despite cheap labor, and has a low manufacturing productivity because enterprises remain small.

Figure 194. Economies of Scale Hard to Get



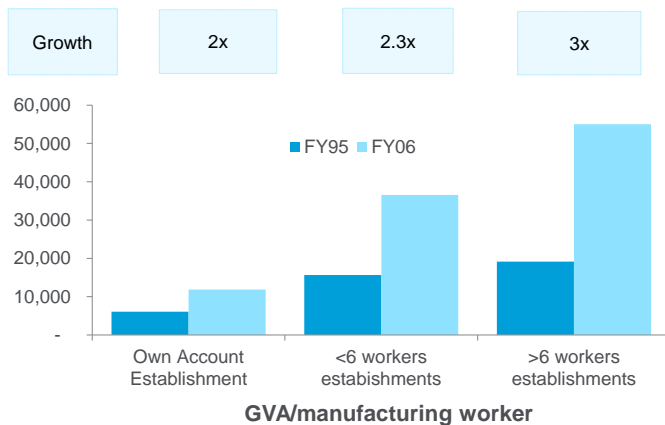
Source: FiveThirtyEight, China Business Council for Sustainable Development, Prowess, Citi Research

Figure 195. Large Firms Have Higher Productivity



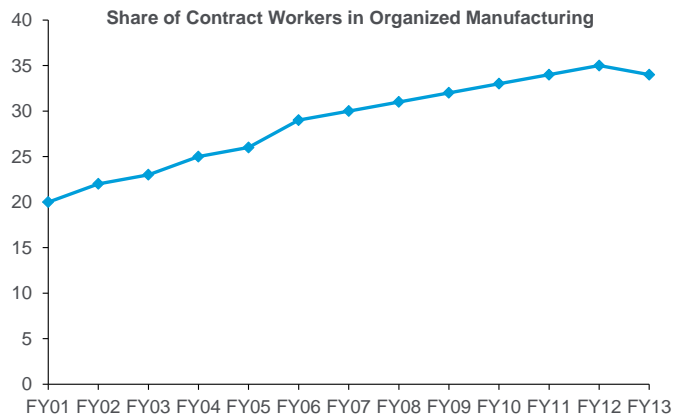
Source: ASI, NSSO, NCEUIS, Citi Research

Figure 196. Historically, Productivity Gap Between Small and Larger Firms Have Widened



Source: NSS, data.go.in, Citi Research

Figure 197. Share of Contract Workers (Mostly Informal) in Organized Sector Manufacturing Has Risk Sharply in the Past Decade



Source: RBI, Annual Survey of Industries, Citi Research

## Structural Forces Now Favor Formalization

Ongoing changes that should accelerate the shift include: (1) a less-cash economy – demonetization has accelerated this; (2) indirect tax changes – GST should be a big push; (3) direct tax compliance; (4) technology/e-commerce; and (5) some progress on labor law reforms.

1. **Borderless National Market; Simpler Tax Regime:** GST is pushing India towards becoming a formal economy by reducing the cascading of taxes through input tax credit chains, boosting returns from economies of scale in manufacturing, and lowering logistics cost. These impacts should make formal units more competitive vs. informal units that largely escape the tax net. Logistics costs in India are among the highest in the world as the market is fragmented (for example, India's food warehousing/cold-chain market is only 8-10% organized) and unorganized owing to the poor state of logistics infrastructure.



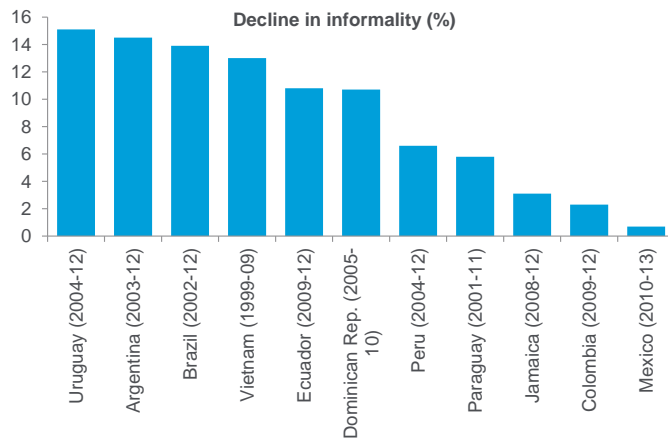
2. **Online Favors Aggregation and Formalization:** Demonetization may have accelerated the move towards a less-cash economy; with new FinTech companies as well as legacy banking institutions expediting the roll out of infrastructure to support digital payments. The JAM framework (Jan Dhan – Aadhaar - Mobile) is a potentially substantive platforms leveraging technology to further accelerate the momentum. Declines in smartphone and wireless broadband prices are expected to bring >700 million Indians online by FY23E, creating fertile ground for e-Commerce marketplaces gain scale, similar to the Chinese experience. Online economics favors aggregation/formalization in unorganized segments (like cabs, household services, food delivery, travel bookings etc.) and by extension in improving productivity and wage growth.
3. **Labor law reforms:** States are taking the initiative on labor laws, but in general, the policy thrust is towards making labor law compliance easier – the government intends to consolidate the over 70 labor laws implemented over the years into four laws with easier paperwork. Studies (Amirapu et al. 2014) suggest compliance with labor laws adds up to 35% to unit labor costs for small enterprises; hence improved compliance requirements could create positive incentives for more formalization. The IMF and other academic studies show growth in enterprises (>100 employees) has significant impact on productivity growth.
4. **FDI Surge:** Research into the decline in informality in Vietnam finds a significant contribution from FDI inflows into manufacturing and other sectors (McCaig et al. 2015). In India, recent liberalizations in FDI norms have resulted in a surge in foreign capital inflows into the economy across manufacturing and services sectors. FDI inflows, particularly in the retail sector (e.g., Ikea's investment in organized furniture retail), could play an important role in increasing the contribution of organized sector in the domestic economy, by bringing in new scalable business models and technologies.

### Appropriate Policies Can Enhance the Speed of Formalization

Misallocation of resources can lead to lower productivity at a macro level and can emanate from poorly designed economic policies, distortionary tax incentives, and market failures that can hinder the growth of formal firms and aid informal firms. IMF research concludes (See IMF Fiscal Monitor, April 2017) that upgrading the tax system can play a significant role in reducing distortions while raising formalization and productivity. In India, the new GST indirect tax regime fits the bill nicely, as it is expected to simplify the indirect tax regime, reduce cascading of taxes, and create a common national market for goods and services by eliminating tax barriers in inter-state trade.

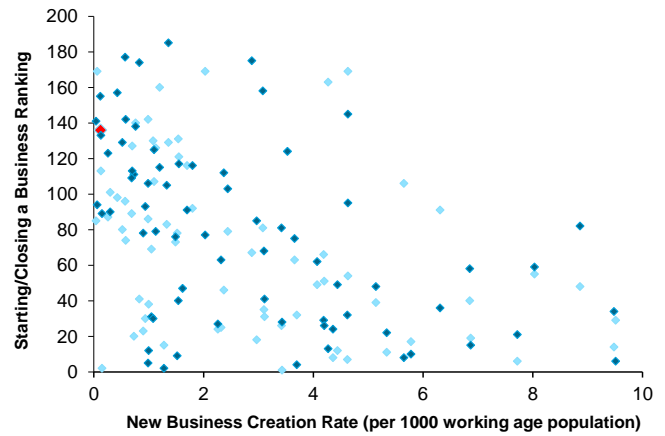
The World Bank has found that high growth itself leads to a gradual shrinking of the informal sector, as employment in the formal sector grows with rising demand. Latin American countries achieved high degrees of decline in informality in the last decade. McCaig et al. (American Economic Review, 2015) find that over 1999-2009, Vietnam's share of the informal sector in employment in manufacturing dropped from 58% to 43%. As per their analysis, younger workers made a key contribution to the decline in informality and exports growth, FDI and higher exposure to global markets had significant impact on the transition.

**Figure 198. Latin American Countries and Vietnam Witnessed Significant declines in Informal Employment in the Previous Decade (2000-10)**



Source: ILO, based on FORLAC Notes, Citi Research

**Figure 199. Business Entry/Exit Reforms Can Have Impact on New (and Formal) Business Creation/Entrepreneurship Rate**



Source: World Bank East of Doing Business Rankings, Citi Research

We believe that if India is able to continue in this path of formalization, minimizing the socio-economic disruptions out of the process, then the productivity gains could be non-linear. As more and more Indian firms aspire to compete at the global level, they would have to attain scale economies and productivity thresholds. Government policies to support formalization would help them achieve those objectives.

## Digital Finance: India on the Frontline

India is a cash-dominated economy, particularly in the consumer sector. However, in the past few years, the Indian market has seen an explosive growth in its digital payments and FinTech ecosystem. Transformation drivers include official supported infrastructure developments such as the “JAM” (Jan Dhan – Aadhaar – Mobile) initiatives, policy measures to reduce cash usage (“demonetization”) and private sector activity, including from local players and international companies in the technology, Internet, and finance sectors.

The result of this rapid digitization of finance, albeit from a low base, holds out the prospect of a more efficient payment system, greater financial inclusion, and a more diverse and deeper financial system, all of which may help support faster and higher levels of economic activity and growth. India is also emerging as a payments and financial services front-line for some of the largest global technology companies and investors from China, Japan, and the U.S.

### India's Transformation towards Digital Payments

India's banking and payment channels are evolving with a push towards digital. This includes transactions via the Unified Payments Interface (UPI platform), credit/debit cards, National Electronic Funds Transfer (NEFT), Immediate Payment Services (IMPS) and others. The number of electronic payment transaction volumes has increased sharply (+45% YoY in year-to-date November 2017), highlighting the increased reliance on formal payment channels as a means for daily transactions. Furthermore, there has been an increase in the share of non-paper transactions (as a percent of all transactions in the economy) from ~60% in April 2013 to ~92% in November 2017. The two most popular digital modes of payments – PPI (m-wallets) and UPI represent nearly 20% and 10% respectively of all transaction volumes via banking channels supported by increased proliferation of m-wallet apps.

Figure 200. India Payment Transactions, 2013-17 – by Volume

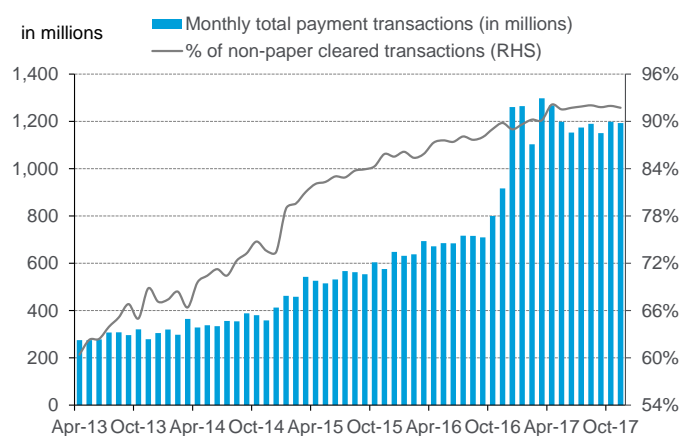
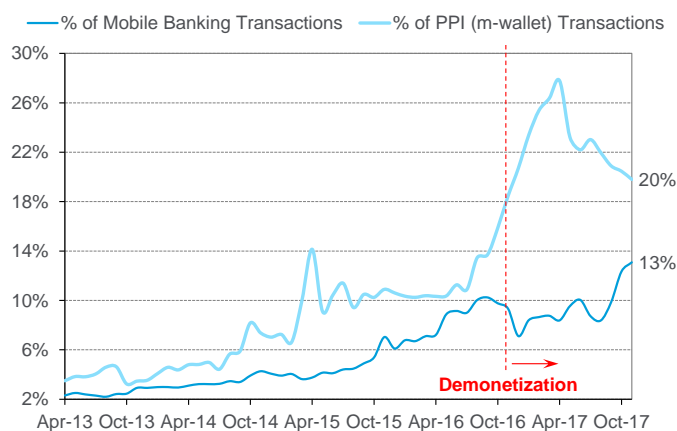


Figure 201. Percent of Payment Transactions (by Volume) Done Through Mobile Banking or m-Wallets

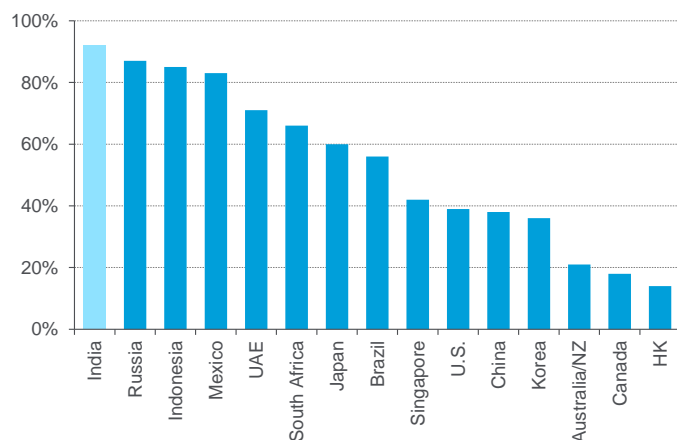


Source: RBI, Citi Research; Note: (1) Total transactions for this exercise EXCLUDES usage of debit / credit cards at ATMs; (2) Mobile banking transactions are undertaken using mobile phones by customers that involve credit / debit to their accounts and includes accessing bank accounts for non-monetary transactions like balance enquiry; (3) mobile banking data from July 2017 includes only individual payments and excludes corporate payments, which were being included earlier.

However, India's broader economy still remains cash dependent, particularly in informal sectors and smaller towns. According to Visa, India up to recently has been one of the most cash-dependent of the larger emerging markets. India has twice as high a proportion of paper-based payments as China. But growing technology adoption, especially among a young population, is driving rapid change.

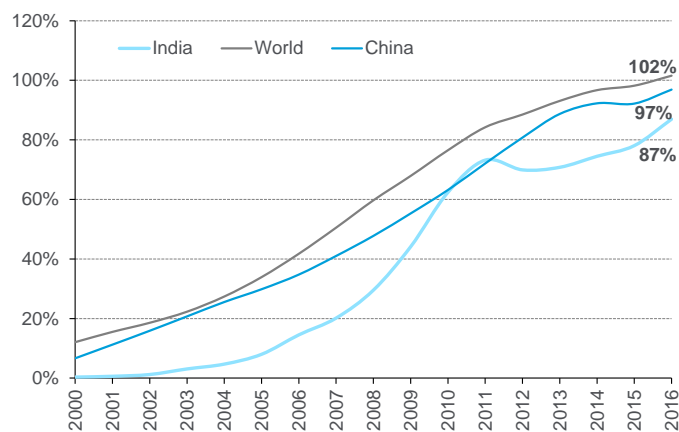
With most of the Indian urban population having a phone now, the ability to achieve widespread m-payments is close.

Figure 202. Percent of Transactions Done in Cash and Check (Cash Penetration by Market)



Source: Visa Investor Day, Citi Research

Figure 203. Mobile Cellular Subscriptions (per 100 people)

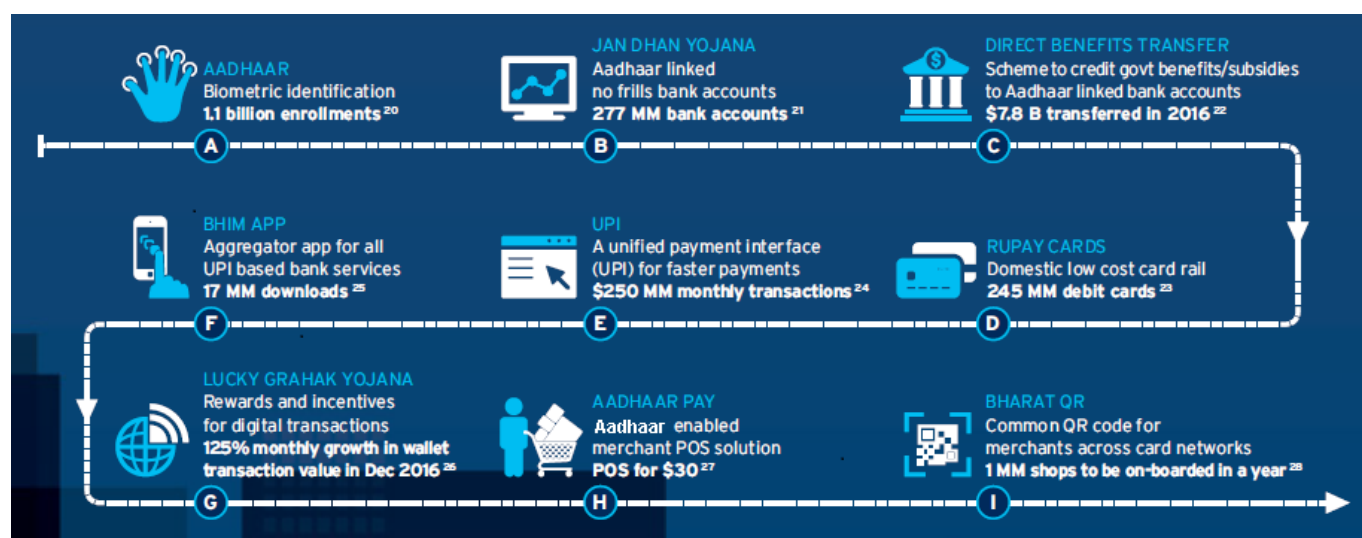


Source: World Bank, Citi Research

Digital initiatives in India tend to be top-down driven by government initiatives, following an open model where several players develop different systems to meet customer needs. India's coming FinTech revolution is based on rewiring its old financial system with cutting-edge biometric identification and real-time consumer payments.

While JAM system is the backbone of India's digital framework, the latest developments in terms of the UPI platform, government-backed BHIM App, Aadhaar Pay and Bharat QR are top-of-the-line cutting-edge technologies that use the JAM framework for digital transactions. Today, Aadhaar is not just a proof of identity, but an important document used for various purposes including availing govt. services, opening new bank accounts / insurance products.

Figure 204. India's Digital Framework



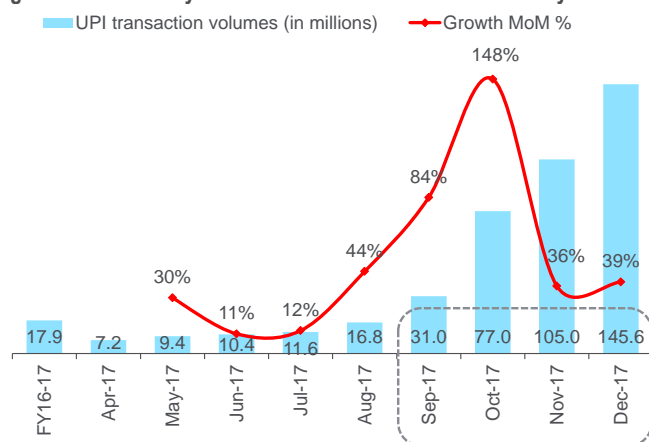
Source: Citi, Imperial College London

Initially supported by government-led initiatives to promote financial inclusion and mobile payments, India's nascent but rapidly growing digital (including finance/payments) scene is now getting large infusions of capital from global players with deep pockets, including American, Chinese, and Japanese origin players. With India becoming a battleground – and arguably testing ground – for the global tech giants' expansion into finance, smaller or medium-sized local players may get squeezed.

### Global Players Eyeing India FinTech Space

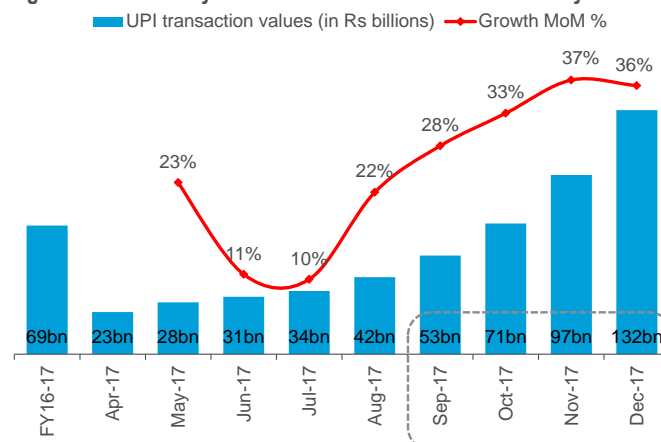
Google's m-wallet 'Tez', launched September 2017, has had some early success in India's crowded payments market, gaining 12mn active users and >140mn transactions as of Dec'17. Google's entry into payments also has fired up the UPI platform with retail transactions quadrupling between September and December of 2017. Total UPI transactions in December totaled 146 million by volume (~10% of retail payments) and Rs132 billion (\$2bn) by value. Notably, attractive cashback/incentives offered by Google Tez and UPI roll-out by m-wallets like PayTM may also have contributed to UPI growth.

**Figure 205. Retail Payment Transactions on UPI Platform – by Volume**



Source: NPCI, Citi Research

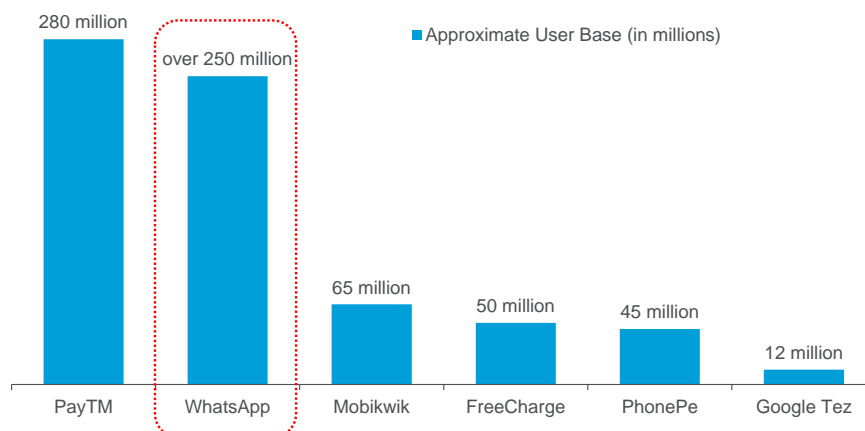
**Figure 206. Retail Payment Transactions on UPI Platform – by Value**



Source: NPCI, Citi Research

WhatsApp (Facebook) is expected to launch its own UPI-based payment service in India soon and the proposal has received government approval to integrate with UPI. Given the ubiquity of WhatsApp in India (>250 million users), WhatsApp could provide a major competitive challenge to current leaders such as PayTM (~280 million users).

**Figure 207. Approximate Number of Users for Prominent Mobile-Wallet Providers in India**



Source: Company Websites, Bloomberg, Business Standard, Economic Times, Entrack, Citi Research Estimates

Other tech giants such as Amazon are also seen strengthening their FinTech footprint. Amazon launched its semi-closed e-wallet in India in July 2017 that is capable of holding money and powering payments on other partnered sites. The company is also in talks with National Payments Corporation of India (NPC) and partner banks to join the UPI payments ecosystem.

### **The Productivity Benefits of Going Digital**

The Finance-Technology interface is in a dynamic phase in India with the potential of ushering in rapid productivity boosts to both the financial and real economy. Here are some of the benefits to be reaped as India becomes digital:

- Spreading of modern financial services would be possible to far-flung areas of this vast country improving financial inclusion.
- Cost of providing financial services could also come down substantially with lesser dependence on brick and mortar branches.
- Lesser usage of cash would limit transaction costs and corruption.
- Government's ability to ride on the JAM infrastructure would reduce cost of leakage in administering different social sector schemes and subsidies.
- The dynamism of research and progress in FinTech could rub onto other areas like use of Blockchain in providing government services.

## Goods & Services Tax (GST) Reform as a Growth Enhancer

The positive medium-term growth impact of the Goods & Services Tax (GST) reform could work through two different channels: (1) lower effective tax rates leading to a tax multiplier effect on consumption/GDP; and (2) efficiency/productivity increase through simplification/removing barriers.

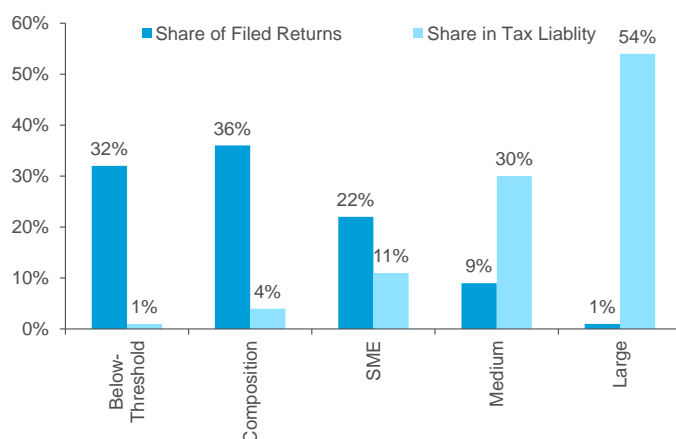
### Effective Tax Rates Under GST Should be Lowered Over Time

Under the multiple-rate GST structure, immediate lowering of tax rates might not be large enough to prompt a demand boost. For most of the commodities the change in tax rates is a modest 2–5% although the government is showing flexibility to reduce tax rates particularly from the highest tax bracket of 28%.

Up until now, large and medium companies (having annual turnover higher than Rs50 million) are contributing to ~85% of the GST collection but only to 10% of the number of GST returns. In fact 77% of all the reported transactions are happening among these large and medium companies. This indicates that the “tail” of companies is not yet contributing much to GST collections

The government is taking measures to improve tax compliance and one can hope that the effective tax rates can be lowered once the revenue buoyancy improves. Also, if the commodities outside the GST ambit (real estate, petroleum products, alcohol) are brought in it, then there could scope for a reduction of tax rates on other products.

Figure 208. Large Companies Driving GST Collection...



Source: Economic Survey 2017-18, Citi Research

Figure 209. ...And Do Business Among Themselves

		Purchaser				
		Threshold	Below composition	SME	Medium	Large
Supplier	Threshold	0.0%	0.1%	0.1%	0.1%	0.1%
	Below composition	0.2%	0.4%	0.5%	0.6%	0.4%
	SME	0.5%	1.0%	1.6%	2.2%	1.3%
	Medium	1.0%	2.0%	4.8%	10.9%	8.3%
	Large	0.7%	1.1%	4.1%	17.3%	40.6%
	Total	2.5%	4.6%	11.1%	31.1%	50.7%
						63.8%
						27.0%
						6.7%
						2.2%
						0.3%

Source: Economic Survey 2017-18, Citi Research

## GST Implementation and Productivity Improvement

We are more optimistic on the efficiency boost coming through the following routes listed below.

- **Better supply chain management/lower logistics cost** as inter-state movement of goods and services will not be taxed. This is particularly important as the Economic Survey estimates that India's internal trade of goods and services (excluding non-GST items) is as high as 60%. Before GST tax on inter-state movement of goods and octroi (local tax) collected at state borders severely hampered inter-state movement of goods and fragmented the national market. The following table gives an idea of how important the inter-state movement of goods is for different states, along with their share in international exports. It is found that the states which trade more are also more competitive (run large trade surpluses).

Figure 210. Inter-State Trade Skewed Towards More Prosperous States

State	% share in exports	Inter-state trade		
		Exports	Imports	Net exports (as % of GSDP)
Maharashtra	22.3%	15.7	13.7	5
Gujarat	17.2%	11.3	7.1	20.1
Karnataka	12.7%	7	7.3	-1.3
TamilNadu	11.5%	8.4	7.8	2.2
Telngana	6.4%	3	4.7	-14.7
Harayana	4.9%	9.4	6.9	26.1
Uttar Pradesh	4.8%	5.6	7.8	-9.6
West Bengal	3.2%	4	4.8	-4.9
Andhra Pradesh	2.8%	3.6	3.7	-1.2
Odhisia	2.0%	2.3	1.9	6.6
Delhi	1.9%	6	5.7	2.6
Rajasthan	1.8%	3.8	4.7	-6.7
Kerala	1.7%	0.8	3.1	-20.1
Punjab	1.7%	3.2	3.7	-7
Madhya Pradesh	1.3%	2.4	3.6	-10.4

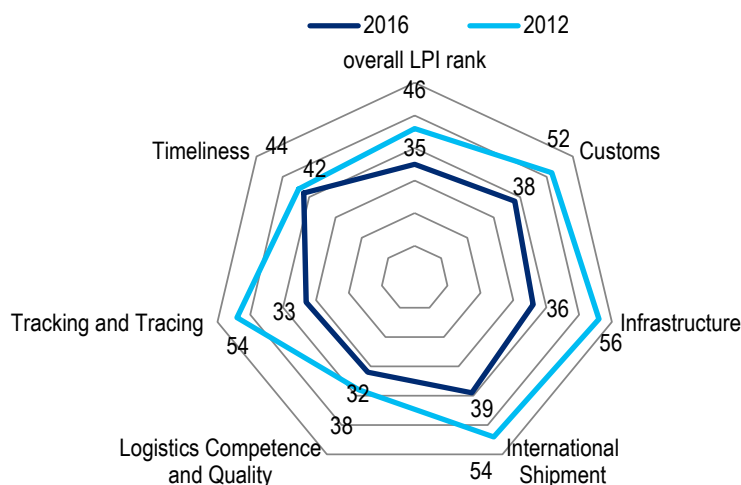
Source: Economic Survey 2017-18, Citi Research

India's ranking in the World Bank's Logistics Performance Index has already improved from 54 to 35 between 2014 and 2016. However, after the GST introduction, if the rank on Timeliness of Deliveries (42nd) is improved, then the overall ranking could also be positively affected. Better logistics could clearly be a productivity enhancer in an economy so dependent on internal trade.

A recent Fed paper estimates that if GST is able to reduce the trade barriers between states, then the positive impact on India's real GDP could be between 3.1% and 4.2%. More interestingly internal trade and external trade are estimated to go up by 29% and 32%, respectively as the barriers to trade are dismantled. These benefits are likely to accrue over several years once the economy adjusts to the new system.



Figure 211. Logistical Performance Index (LPI): India's Ranking improves



Source: World Bank, Citi Research

- A more **rational reorganization of setting up of production facilities** closer to markets or inputs, as differential tax rates will not drive decision making. Although this will be a major productivity enhancer, we think that it will take time to play out as production location decisions have a long lead time.
- **Removing multiplier layers in the tax system** so that all input tax credits can be provided in a seamless fashion and there is no cascading effect of taxes. This effect should be able to reduce the final price for the consumers over time and help the producers with less tax hassles. However, in the near-term there are teething problems of adapting to the new system which producers will have to overcome.
- **Formalization of the economy** with new GST registrations could also enable productivity growth. New registrations by firms of 3.4 million have taken place after GST introduction among which 30% are exporters and 34% business-to-business (B2B) firms. However, as the Economic Survey notes, only 0.6% of the firms accounting for 38% of total turnover, 87% of exports, and 63% of GST liability are truly in the formal sector (in both tax and social security net) and 87% are purely informal (neither in tax or social security net). GST has the potential to alter this landscape.

We are optimistic about all these productivity boosting effects of GST introduction in the medium term as the short-term disruptions are likely to fade soon.



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# The Impact of High Growth

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## Changing Consumption Patterns

A sustained high-growth environment works in a feedback loop with the consumption story – higher growth leads to more income generation which supports consumption and higher spending in turn leads to demand for production of more goods and services. In this section we look at some of the structural trends in India's consumption story and try to quantify the potential opportunity in different product categories.

The long term India consumption story is predicated on: (1) a large growing population coupled with a young median age; (2) an increase in the labor force; and (3) a consistent trajectory of rising incomes, which will result in the continued growth of the middle class and the conversion of the consumer pyramid to a diamond.

We touch upon two trends which we think are structural in nature and will endure over the long term.

### A: Low Penetration = Long Term Growth Opportunity

We think there is substantial growth opportunity, given where retail per capita spends are in home care, personal care, and food & beverage. Based on our analysis in the following tables, we think the growth opportunity is very high in the 'categories of tomorrow' – semi-premium/premium categories that are as yet fairly under-penetrated like hand dish wash, washing machine detergent, deodorants, premium beauty, etc.

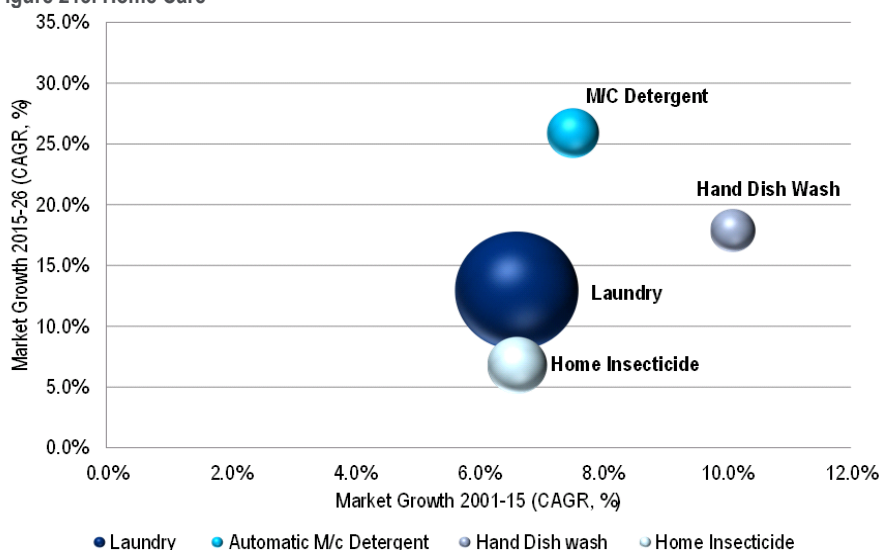
**Figure 212. Home Care: Category opportunity (Growth Rate Potential)**

Category	Per capita spend (CY'15, \$ per annum)	Per capita spend at US\$4000 / capita (\$ per annum)	Revenue opportunity (\$bn)	11 year CAGR
Laundry	2.1	7	3.8	12.9%
Detergent for washing machines	0.4	4.4	12.6	25.9%
Hand Dish wash	0.3	1.6	6.1	17.9%
Home Insecticides ** (not income dependent)	0.5	0.9	2.1	6.8%

Source: Citi Research, Euromonitor

**Within home care**, the big category is laundry – which is expected to grow at around 13% compound annual growth rate over the long term. Washing machine detergent is forecast to grow at 2x overall detergent, but we note the category is a fraction of the size of overall detergents, with spends/capita (US\$) around 1/5 of overall laundry.

**Figure 213. Home Care**



Source: Citi Research, Euromonitor; Size of bubble = market size

**Within personal care**, there are several 'categories of tomorrow' which are expected to grow at >20% or more, e.g., deodorant, premium beauty, and personal care. The large categories which we also expect to accelerate from a growth perspective are shampoo, hair oil, and facial care. We expect bath and shower as a category to grow at a smaller pace than most on account of its relatively high penetration.

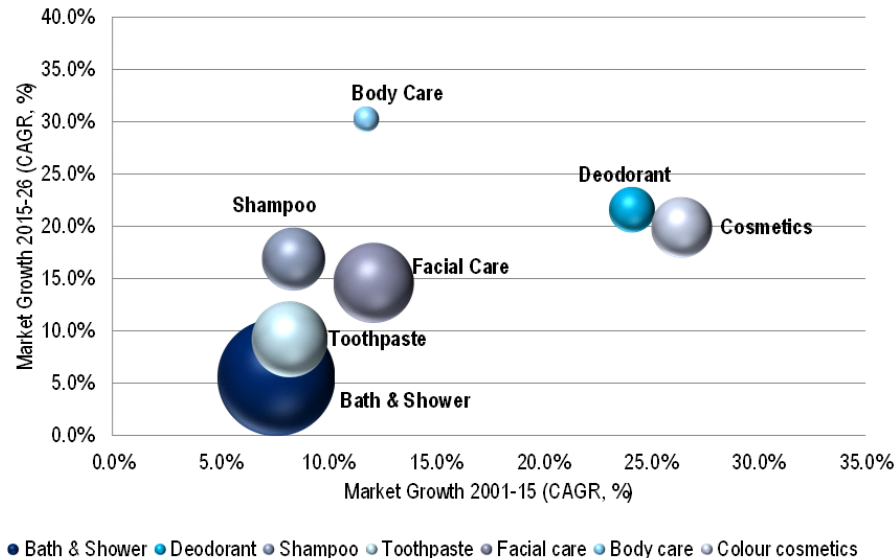
Figure 214. Personal Care: Category Opportunity (Growth Rate Potential)

Category	Per capita spend (CY'15, \$ per annum)	Per capita spend at US\$4000 / capita (\$ per annum)	Revenue opportunity (\$ bn)	11 year CAGR
Bath & Shower	2.4	3.8	1.8	5.5%
Deodorant	0.4	3	8.6	21.6%
Shampoo	0.7	3.4	5.6	16.9%
Hair Oil	1.2	3.8	3.8	12.9%
Toothpaste	1	2.3	2.6	9.2%
Skin care	1.3	6.7	5.9	17.5%
Facial care	1.1	4.3	4.5	14.6%
Body care	0.1	1.6	18.3	30.2%
Color cosmetics	0.7	4.5	7.4	19.9%
Mass beauty & personal care	6.9	30.2	5.0	15.8%
Premium beauty & personal care	0.4	3.9	11.2	24.5%

Source: Citi Research, Euromonitor

As may be seen from the chart below, the biggest bubble (bath and shower) is also expected to have the slowest growth rates.

Figure 215. Personal Care



Source: Citi Research, Euromonitor; Size of bubble = market size

**Within food & beverage**, we expect ice cream, instant coffee, chocolates, fruit juice, and baby food all to accelerate and grow at a compound annual growth rate >20%. Indeed, packaged foods is expected to grow at >20% – even a fairly large category like biscuits is forecast to grow at 2x the rate of body wash, despite a higher spend/capita.

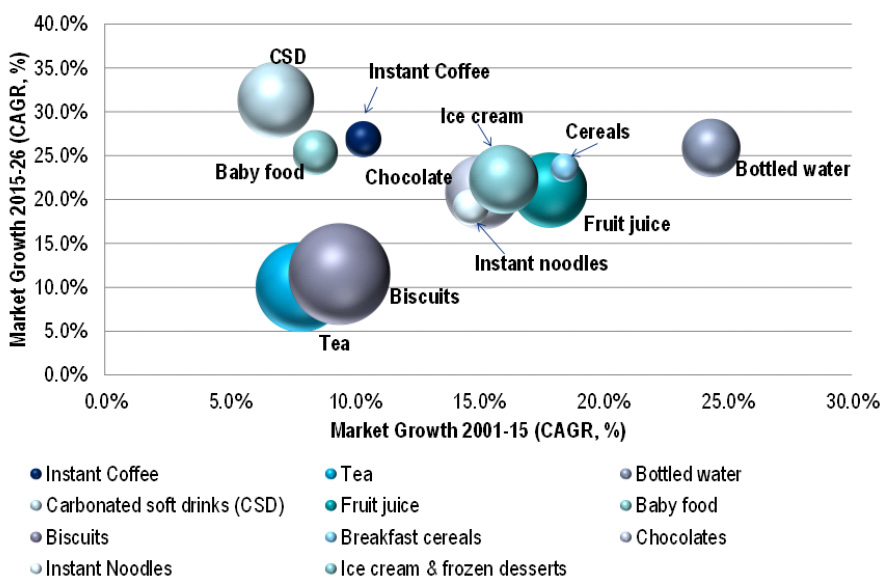
Figure 216. Food and Beverage: Category Opportunity (Growth Rate Potential)

Category	Per capita spend (CY'15, \$ per year)	Per capita spend at US\$4000 / capita (\$ per year)	Revenue opportunity (\$bn)	11 year CAGR
Packaged foods (total)	31.6	252.2	9.1	22.3%
Biscuits	2.8	8.1	3.3	11.5%
Tea	1.8	4.5	2.9	10.0%
Instant Coffee	0.3	3.6	13.7	26.9%
Bottled water	0.7	7.7	12.6	25.9%
Carbonated soft drinks (CSD)	1.3	22.8	20.1	31.3%
Fruit juice	1.2	8.6	8.2	21.1%
Baby food	0.4	4.2	12.0	25.4%
Breakfast cereals	0.2	1.8	10.3	23.6%
Chocolates	1.5	10.5	8.0	20.8%
Instant noodles	0.3	1.8	6.9	19.1%
Ice cream & frozen desserts	1	8	9.2	22.3%

Source: Citi Research, Euromonitor

Unlike Health & Personal Care (HPC), which is dominated by some large but slow growth categories, Food & Beverage also has some very large categories, i.e., biscuits and tea, but these are forecast to grow at growth rates >10% – much faster than bath and shower. In addition, there are also some other categories (carbonated soft drinks, noodles, bottled water, fruit juice), which are fairly sizeable and can also grow at a reasonable clip.

Figure 217. Food & Beverage

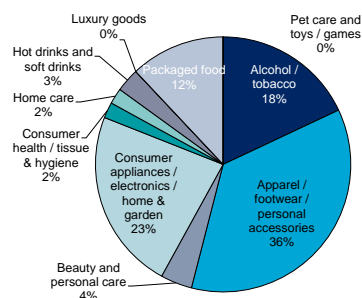


Source: Citi Research, Euromonitor; Size of bubble = market size

## B: Wallet shift to more discretionary items, even in staples

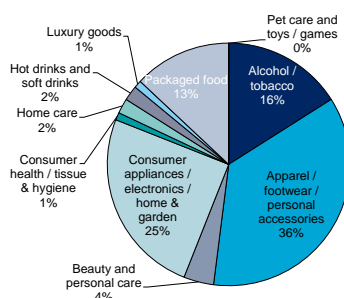
The consumer wallet in India (based on Euromonitor trends) has changed in composition over the last 10 years. In this time period, the two categories which have gained 'wallet share' are apparel/footwear and packaged foods. The category which has lost share is alcohol/ tobacco (most of the slippage appears to be tobacco, especially in the past couple of years). What is a bit counterintuitive is that consumer appliances/electronics and home/garden as percent of wallet have been relatively static/declined. We think this is probably on account of lower duties/prices (4%/1% price-mix growth rate over 10 years in appliances/electronics).

Figure 218. Consumer Spends (% split, CY2005)



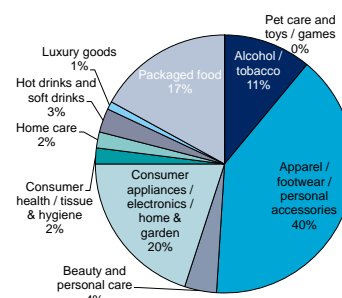
Source: Citi Research, Euromonitor

Figure 219. Consumer Spends (% split, CY2010)



Source: Citi Research, Euromonitor

Figure 220. Consumer Spends (% split, CY2015)

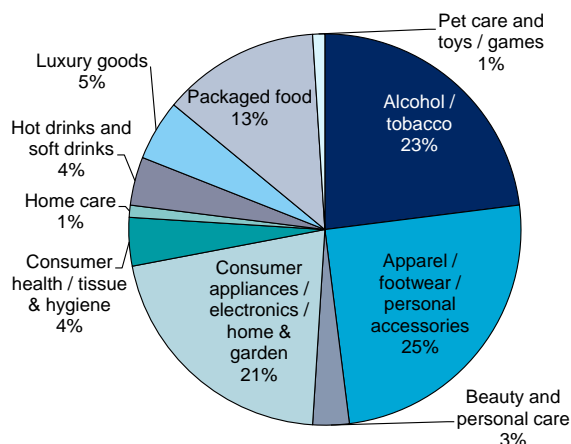


Source: Citi Research, Euromonitor

## How do household consumption patterns differ in India vs. other countries?

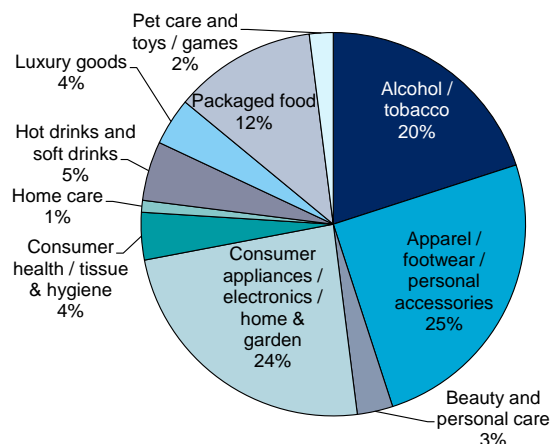
When we compare India with China and the United States, it is apparent that where India clearly differs from China is that China has a much bigger share of tobacco/alcoholic beverages – the difference being tobacco and not alcohol. Packaged food is a lower proportion, while consumer health and tissue/hygiene is slightly larger. Luxury goods are almost 4% of the wallet in China – a much smaller proportion in India.

Figure 221. China: Consumer Spends (% split, CY2005)



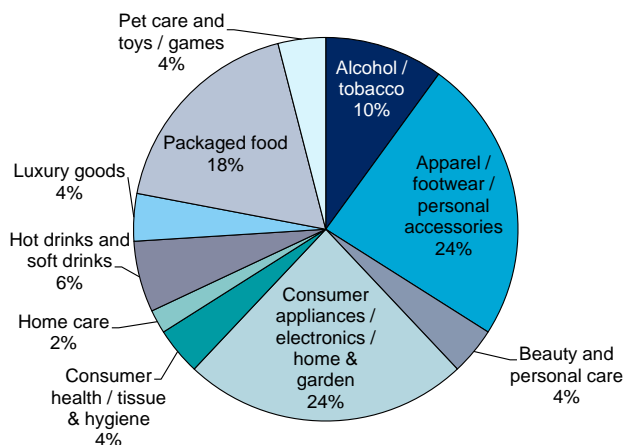
Source: Citi Research, Euromonitor

Figure 222. China: Consumer Spends (% split, CY2015)



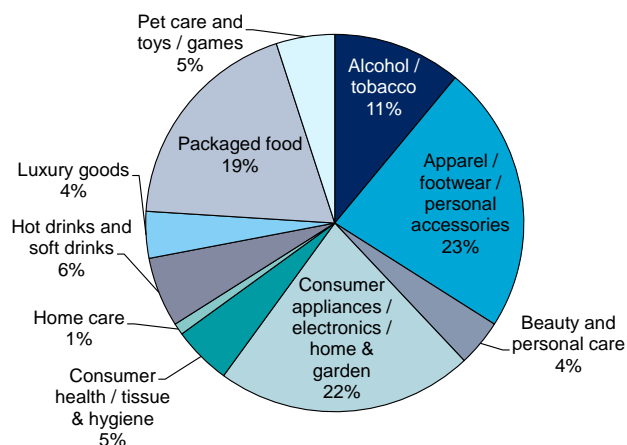
Source: Citi Research, Euromonitor

Figure 223. USA: Consumer Spends (% split, CY2005)



Source: Citi Research, Euromonitor

Figure 224. USA: Consumer Spends (% split, CY2015)

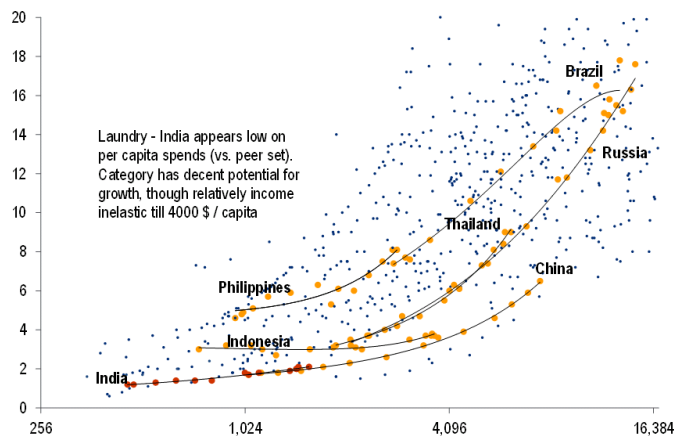


Source: Citi Research, Euromonitor

Surprisingly, India is somewhat similar to the U.S. in terms of wallet composition – similar share in tobacco/beverages and packaged food. Where India is different though is the split between apparel/footwear, luxury, and consumer health/hygiene – categories where proportion of spends is more similar between the U.S. and China.

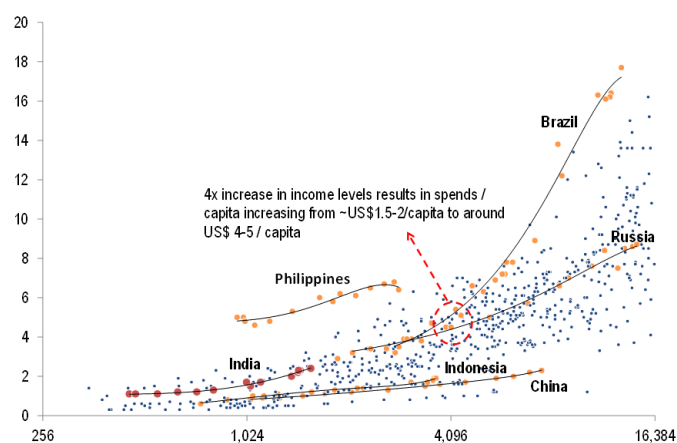


**Figure 225. Laundry Category Spends (\$/capita, Y axis) vs. GDP (\$)/capita (x axis)**



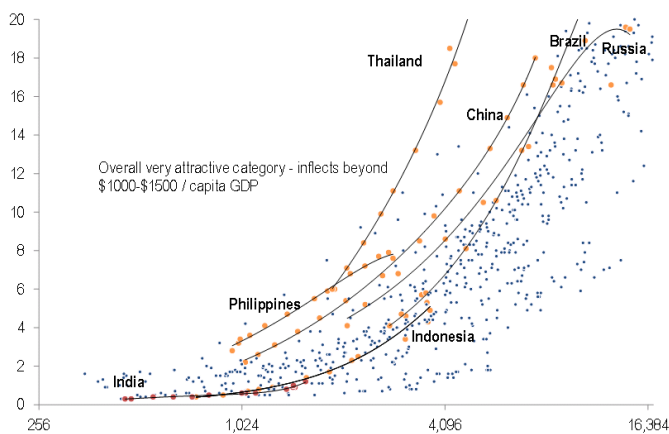
Source: Citi Research, Euromonitor; Note: India is in red; x axis on log scale

**Figure 226. Bath and Shower Category Spends (\$/capita, Y axis) vs. GDP (\$)/capita (x axis)**



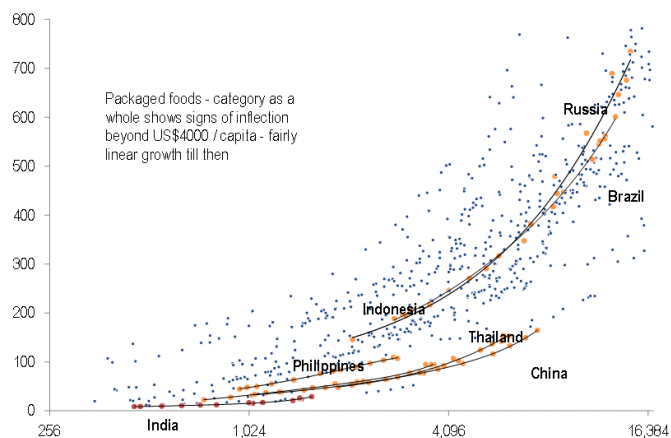
Source: Citi Research, Euromonitor; Note: India is in red; x axis on log scale

**Figure 227. Skin Care Category Spends (\$/capita, Y axis) vs. GDP (\$)/capita (x axis)**



Source: Citi Research, Euromonitor; Note: India is in red; x axis on log scale

**Figure 228. Packaged Foods Category Spends (\$/capita, Y axis) vs. GDP (\$)/capita (x axis)**



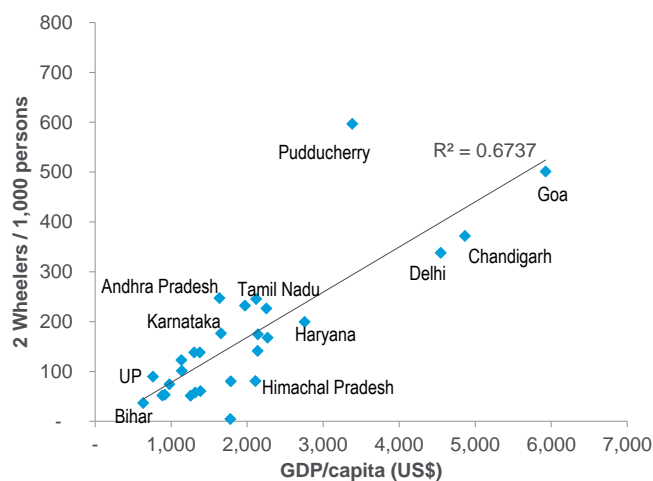
Source: Research, Euromonitor; Note: India is in red; x axis on log scale

## Autos: Long Runway for Growth

Within discretionary categories like autos, there is a fairly strong correlation between income levels and penetration. From the charts below, the correlation ( $R^2$ ) ranges from around 0.67 for 2 wheelers and a very high 0.79 for passenger vehicles. Thus there is a fairly strong linear correlation between 2 wheelers and passenger vehicle penetration/1000 people. As income levels increase in the more economically backward states, we should see a catch up or mean reversion happening in vehicle penetration in these poorer states.

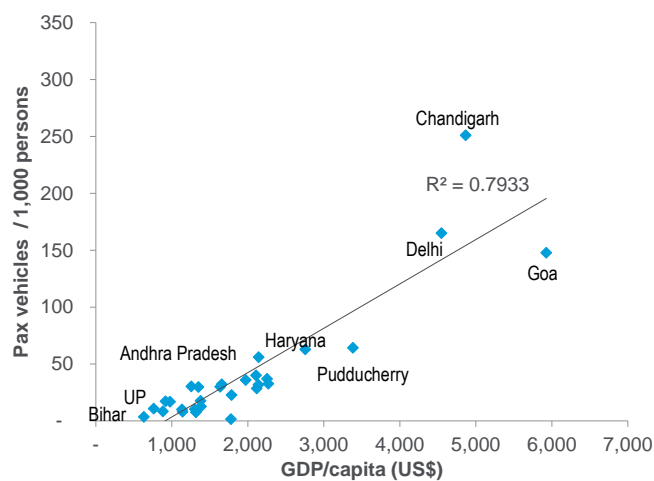
For example, the impact of rising incomes on vehicle sales can be seen with the charts below. Very simplistically, if the two-wheeler population were to rise to 300/1000 in states like Bihar and UP from current levels of 30/100, respectively it would add 70.4 million two wheelers to the current estimated two-wheel total number of 160 million vehicles.

Figure 229. India: State-wise 2-wheeler Total vs. GDP/Capita



Source: Census data, Ministry of Road Transport and Highways, SIAM, Citi Research

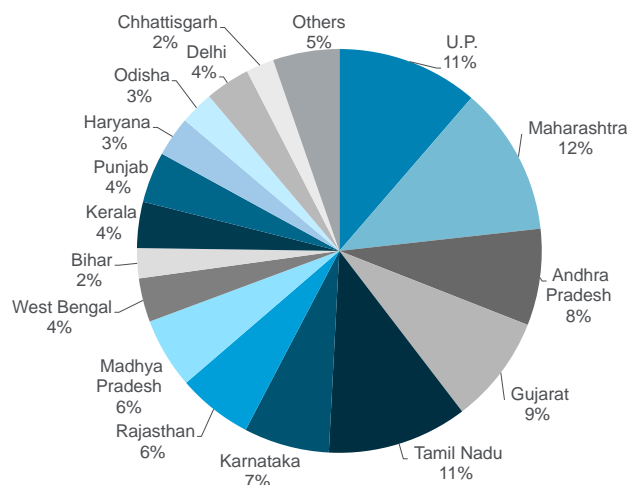
Figure 230. India: State-wise Passenger Vehicles Total vs GDP/capita



Source: Census data, Ministry of Road Transport and Highways, SIAM, Citi Research

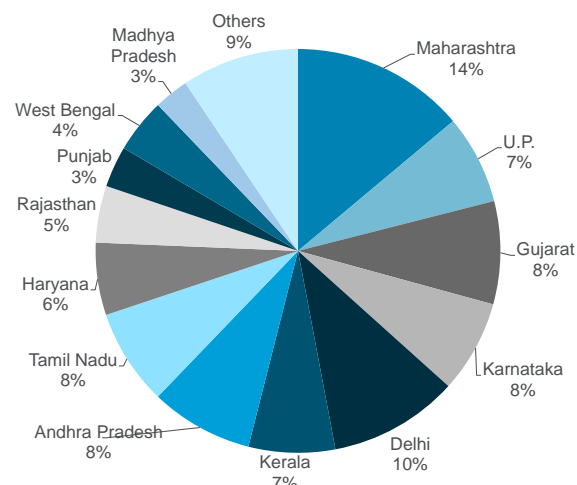
Extending the same exercise for passenger vehicles, if UP and Bihar were to rise to around 30 vehicles/1000 people from the current levels that we estimate of ~5/10 per 1000 people respectively, this would add around 6.7 million vehicles to the current all India PV parc of 32 million vehicles.

Figure 231. State-wise Estimates of 2-wheel Total (%)



Source: Citi Research estimates, CSO, SIAM

Figure 232. State-wise Estimate of 4-wheel (Passenger) Total (%)



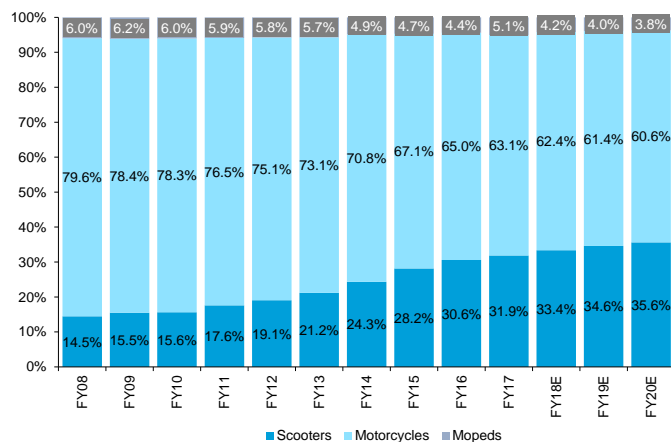
Source: Citi Research estimates, CSO, SIAM

### Premiumization is a Structural Trend in 2 Wheelers

Over the past few years, rising income levels have led to premiumization of both two-wheelers and also within bikes. Scooters are around Rs5,000-Rs10,000 more expensive than entry level bikes. Yet they now constitute around 33% of sales from around 15% a few years ago on account of the unisex appeal of scooters.

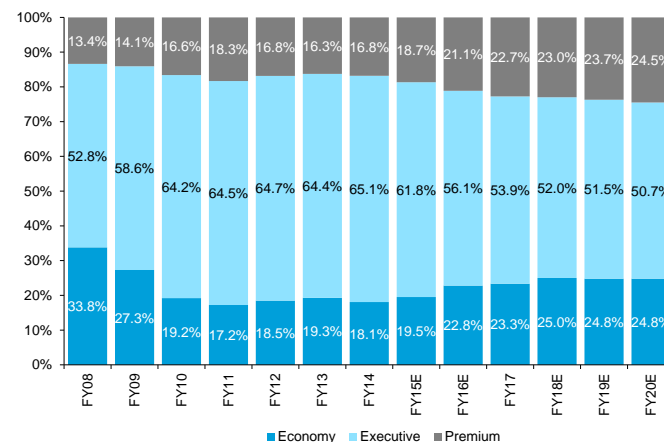
Within bikes too, premium segment bikes have grown from around 16% of total bikes to 23% of total bikes in FY18E.

Figure 233. Domestic 2-Wheeler Segment Mix



Source: Citi Research, Industry reports

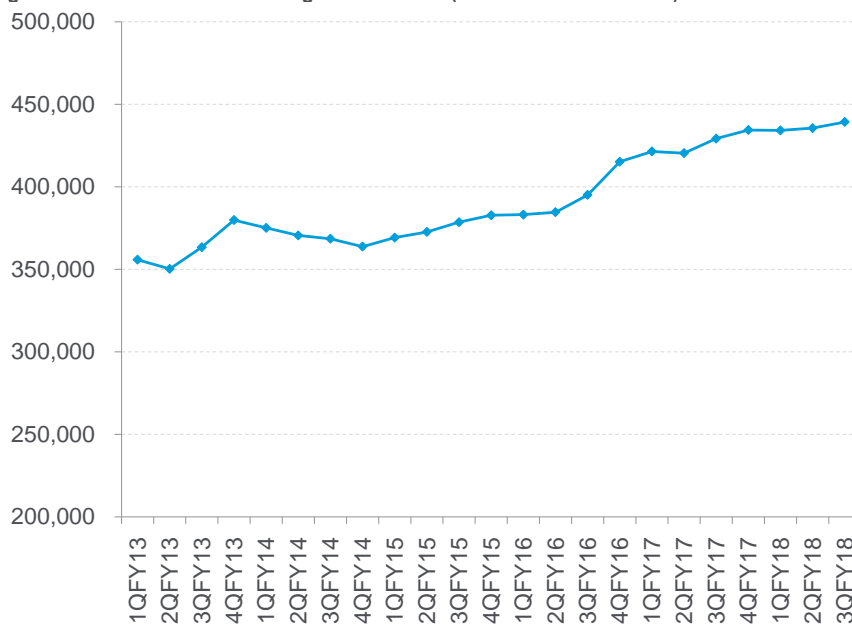
Figure 234. Domestic Motorcycles Segment Mix



Source: Citi Research, Industry reports

Even in passenger cars, the mix shift towards SUVs and mid-sized cars is evident, even in players like Maruti Suzuki which were earlier renowned for their dominance in the entry-level car segment. In the past 5 years, Maruti's average realizations per vehicle have risen from ~Rs350,000/vehicle (\$5.5k) to ~Rs450,000 (\$7k) per vehicle an almost 30% increase in car sales.

Figure 235. Maruti Suzuki's Average Realizations (Net sales/vehicles sold)



Source: Company Reports

## From Economic Prosperity to Urbanization Needs

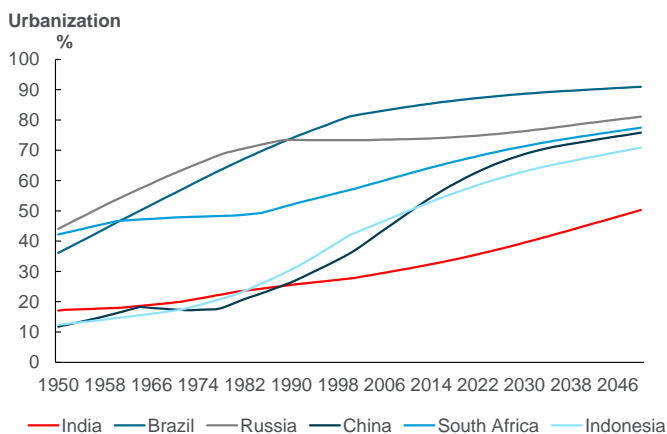
On the one hand, higher levels of urbanization is an outcome of economic prosperity, while on the other hand, creation of large scale urban infrastructure by itself supports investment growth and helps in job creation. Also, the improvement in quality of life through better urban infrastructure should enhance productivity growth too.

Only a third of India's population lives in urban areas. This is much lower than the share of urban population in other major emerging economies such as China (57%), Indonesia (55%), Brazil (86%), Russia (74%), and South Africa (66%). The gap wasn't always so large. Not so long ago (1990), the urbanization rate in India at 26% was almost same as China (26%) and Indonesia (30%). Interestingly some studies find that India's urbanization rate could be much higher (more than 50%) if an alternative definition (uniform commuting distance from existing large cities) is used. According to this definition, 52% of India's population lives within an hour's distance of a city with a population of at least 50 thousand people.

Also, we have to note that between 2001 and 2011, the total increase in urban population was higher than the increase in rural population for the first time after independence. Over this period, urban population growth at 31.8% was 2.6 times the growth in rural population (12.18%).

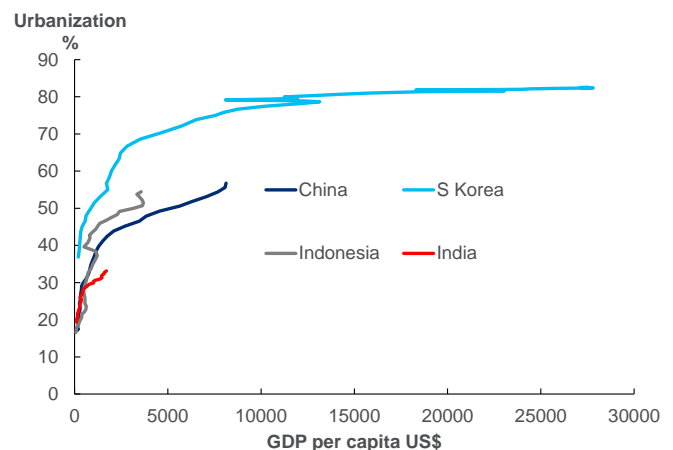
There are several arguments for why India has been slow to urbanize over the past three decades. The government appointed High Powered Expert Committee study argued that this could partly be due to much lower per capita incomes in India and partly due to the nature of economic growth in India which has seen capital-intensive industrialization and skill-intensive services boom, but not labor-intensive, rural migration-led growth.

**Figure 236. India Slow to Urbanize So Far**



Source: UN Population Database, Citi Research

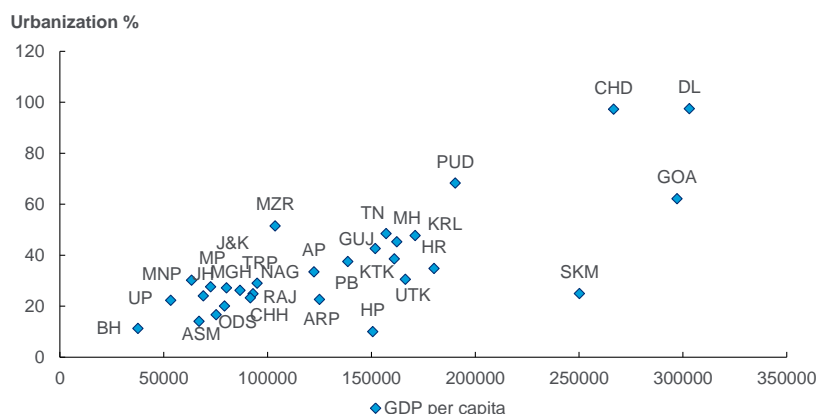
**Figure 237. Rising Income Levels Associated with Urbanization**



Source: UN Population Database, Citi Research

The disparity in the urbanization level across Indian states is clearly correlated with economic conditions. Some of the richer states with higher GDP per capita such as Goa, Delhi, and Chandigarh are highly urbanized, while industrial states like Tamil Nadu, Gujarat, Karnataka, and Maharashtra have urbanization over 40-50%. Similarly poorer states with lower GDP per capita (but larger population) like Bihar and UP have urbanization levels at 11% and 22%, respectively. When these relatively poorer states progress economically, India's urbanization rate should start witnessing a meaningful increase.

**Figure 238. States with Higher GDP Per Capita are More Urbanized**

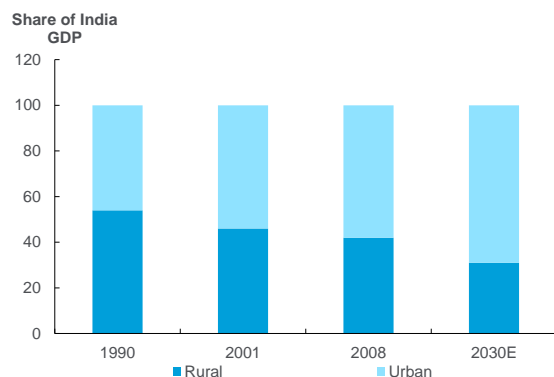


Source: Census, CEIC, Citi Research

### Doubling of Urban Population Requires Urban Planning

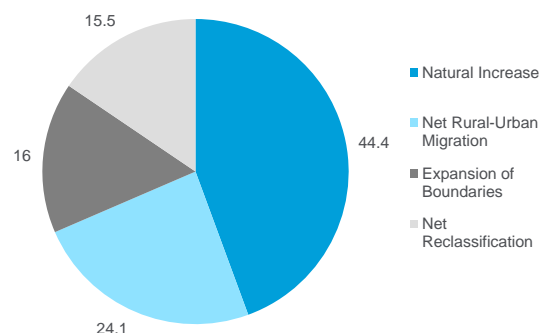
The structural transformation of an economy goes hand in hand with urbanization. This trend has been observed in every major country in the world as population shifted from rural, agrarian life to urban, non-agriculture occupations. With economic growth headed towards 8%, several studies (including the UN Population Division and the High Level Expert Committee) see India's urbanization rate improving to 40% by 2030-31 from the current 31% level, with around 250 million people getting added to India's cities, taking the total urban population to around 600 million. This will also enhance the total contribution of cities in national GDP to around 70 percent by year 2030 (as per a McKinsey estimate). This scale of urbanization has not been seen anywhere other than in China and therefore an urban planning and development of similar scale will have to be pursued.

**Figure 239. Urban GDP Share to Rise to 70% by 2030**



Source: McKinsey Report - India's Urban Awakening; Citi Research

**Figure 240. Sources of Increase in Urban Population (2001-2011) Largely Organic**



Source: Census Reports, Citi Research

Interestingly, an important feature of urbanization in India has been the relatively smaller contribution of migration to the increase in urban population in India. Net migration from rural areas contributed only 21% to the increase in urban population in the 1990s, while the natural organic increase was the largest source of increase in urban population. Thus there is little historical evidence of migration led urbanization in India so far.

### Census towns – a unique feature of India's urbanization

Census towns in India are defined as urban area with the following three characteristics

- A minimum population of 5,000.
- Density of population at least 400 persons/square kilometer.
- At least 75% of the male population engaged in non-agricultural activities.

Between 2001 and 2011, there was an explosion of new census towns – 2,532 such new towns were created against only 242 new statutory towns (which have some form of government run urban administration through a municipality). Although only 15% of the urban population lives in these census towns (double the proportion in 2001), they contributed almost one-third of the increase in urban population between 2001 and 2011. Their rather chaotic but stupendous growth shows that India's urbanization is often not about building new cities but about changing the nature of jobs which is converting large villages into towns. In fact, only 74 new Class 1 towns (more than 100k population) emerged between 2001 and 2011.

**Figure 241. Importance of Census Towns on the Rise**

	2011	2001	Change	% growth	% of urban population in 2011
Statutory Towns	4,041	3,799	242	6%	15%
Census towns	3,894	1,362	2,532	186%	15%
Total towns	7,935	5,161	2,774	54%	30%
Class 1 Towns (more than 100k population)	468	394	74	19%	70%
Million plus towns	53	35	18	51%	43%

Source: Census Reports, Citi Research

India's urbanization challenge is just not about building large modern cities but also ensuring that the census towns at the bottom end of the pyramid also get basic civic urban amenities. These are often pockets of dynamism and high demand and their requirements could be quite different from the rest of the urban population. Although India is also trying to build new cities (particularly around the industrial corridors), we believe that development of existing urban centers and the census towns would be key in the next 10 years of urbanization. As per capita income increases in these places, the demand for better quality urban infrastructure would increase and providing that would require not only financial resources but also extensive urban planning.

## Tracing the History of Urban Development Plans

Realizing the need for large scale urbanization, developing urban infrastructure remains one of the policy priorities of the government and it is to the credit of earlier attempts of urbanization in India that has led to an increase in the share of urban population from 23% in 1981 to 31% in 2011. The earliest attempt in the late 1970s onwards was through the scheme of Integrated Development of Small and Medium towns (IDSMT) which covered 1,854 towns with population up to 50,000. In 1993, this scheme was supplemented by the Mega City Scheme in five cities. Finally in 2005, the two schemes were merged in the comprehensive Jawaharlal Nehru National Urban Renewal Mission (JNNURM) covering 67 cities with an estimated investment of \$20 billion which ran close to a decade. Although the JNNURM brought substantial reforms in urban level policy making, critiques pointed out that only 39% of the 3,138 sanctioned basic urban infrastructure projects were completed.

## Smart Cities Mission Launched by the Government Gaining Traction

The latest and the most ambitious urban development plan of the government is the Smart Cities Mission, launched in 2015. The table below explains the timeline of the progress of the Smart Cities Mission (SCM) where 99 cities have so far been selected in phases on the basis of their submission of proposals in the Smart Cities challenge. According to the Smart Cities website (<https://smartnet.niua.org/smart-cities-network>) the total cost of approved projects has been more than Rs2.0 trillion (\$31bn), impacting an urban population of ~99.4 million (~28% of urban population). As per latest data (January 2018), 189 projects worth Rs22 billion (\$342m) has been completed while 2,948 projects worth Rs1.4 trillion (\$22 billion) are in various stages of implementation.

## Participative Approach at the Core of Smart City Mission (SCM)

The participative approach to developing the Smart City Plan is more democratic and provides the cities enough flexibility to focus on their individual priorities. It is also expected to foster the tenets of competitive federalism and even prompt the citizens to demand better urban infrastructure.

Figure 242. Key Features of Smart City Mission

Number of cities	Total funding	Projects to be undertaken	Important changes from earlier approaches
100 cities targeted; 90 already selected	Central funding of Rs500bn spread over 5 years	Area Based Development - retrofitting (500 acres), redevelopment (50 acres) and greenfield development (250 acres)	Participative approach to City Planning rather than a Central solution
	Equal funding from states and Urban Local Bodies; user charges, PPP envisaged	Pan-city development	An SPV approach to execution of projects rather than through local institutions
	An SPV to be created where private equity participation is also allowed		More use of technology but not more than 25% of project cost

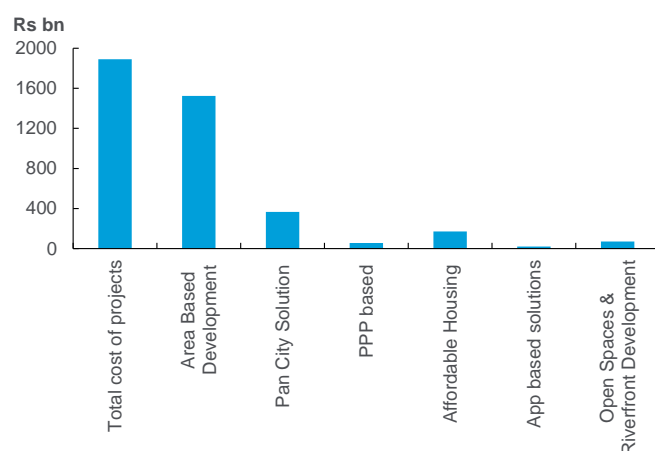
Source: Smart Cities Portal, Citi Research

### Initial Focus on Area Based Development Projects

There are two broad types of projects under SCM – Area Based Development (ABD) projects where only a part of the city will be developed and Pan City development projects, which will improve city wide infrastructure. Official data suggest that ~80% of the projects (for the first 59 cities selected under SCM) fall under the ABD projects which cover only 2.7% of the area under these cities. For example, in Pune, 76% of the funds are likely to be spent on a project which covers ~1.3% of the city area.

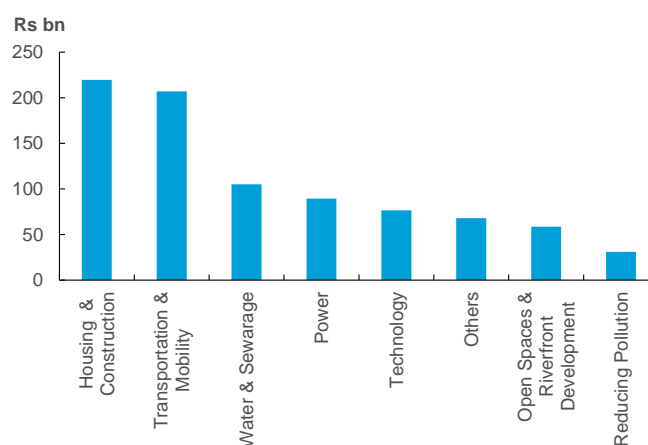
The government argues that these initial projects are like “lighthouse projects” which will serve as examples for others to replicate. Also, given the capital intensive nature of these infrastructure projects, it is difficult to implement pan city projects in the beginning. The Rs100 billion (\$1.5bn) of funds offered by the central government to each city every year are not large enough for pan city projects and the cities need to leverage the seed money and find alternative sources of funding. In fact, 36% of the projects announced in the list of first 59 cities are less than Rs1 billion (\$15m) in size. Also, 13% of the projects are in Affordable Housing where funding from other schemes is possible.

Figure 243. Smart City Mission – Cost Distribution



Source: Smart Cities Portal, Citi Research

Figure 244. A Look at the Composition of Projects > Rs1 billion



Source: Smart Cities Portal, Citi Research

For somewhat larger projects (more than Rs1 billion), we estimate that about half of the projects (in terms of project cost) are for Housing & Construction and Transportation & Mobility. Water and sewerage projects follow them in terms of importance.

### Development of Municipal Bond Market Could be Connected to SCM

One of the sources of funding considered for Smart Cities is municipal bond issuance. The government has allowed 26 municipal corporations to issue bonds and 16 of them have already appointed transactional advisors. Pune has been the first of them to issue Rs2 billion (\$31m) of municipal bonds in June in one of the largest issuances ever. The urban development ministry is considering offering a 2% interest subsidy on the size of bond issuances and has earmarked Rs4 billion (\$62m) for this purpose.



### AMRUT Replacing JNNURM and Supplementing SCM

Apart from SCM, Prime Minister Modi also announced the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in June 2015. Since a lot of the projects under JNNURM were yet to be completed, the government opted for incorporating some of those projects into AMRUT which had better chance of completion. The Cabinet approved ~Rs500 billion (\$7.8bn) for AMRUT projects in 500 cities to be spent over 5 years. The AMRUT program had 3 broad targets

- Drinking water tap for all households and sewerage facility;
- Development of greenery and well maintained open spaces (parks); and
- Reduce pollution by switching to public transport or non-motorized transport.

### More Needs to be Done on the Financing Front

In the first two years of the SCM and AMRUT, the government has done well in identifying the urban infrastructure development agenda through a participative process involving state governments and urban local bodies. While the budgetary allocation for the urban development ministry has increased significantly, the large-scale financing needs of urban infrastructure cannot be met without alternative sources of funding. In 2011, a High Powered Expert Committee estimated that Rs39.2 trillion (at 2009-10 prices) would be the urban infrastructure need over a 20-year period. The Rs1 trillion (\$15.5bn) of central government funding allocated towards SCM and AMRUT appear small in this context. The development of the municipal bond market could be a step in the right direction but more capacity building at the level of urban bodies and reforms to streamline the processes would be required to meet India's urban development aspirations. In the near term, the total impact on urban infrastructure of SCM and AMRUT has to be seen in conjunction with other projects like Pradhan Mantri Awas Yojna (PMAY Urban), Metro rail projects in several cities, the Swachh Bharat Mission etc. Without significant urban infrastructure capacity building, it will be difficult to meet India's rising aspirations for an urban life.

## Housing

### Significance of the Sector and Overall Opportunity

Housing is not only one of the basic needs of a family but in the early stages of the development process, construction of houses also adds significantly to overall investment and job creation. Share of construction in India's GDP has already moved up to ~9% (from 6.5% in 1990's) and has the potential to move even higher if the government's emphasis towards the sector starts yielding results.

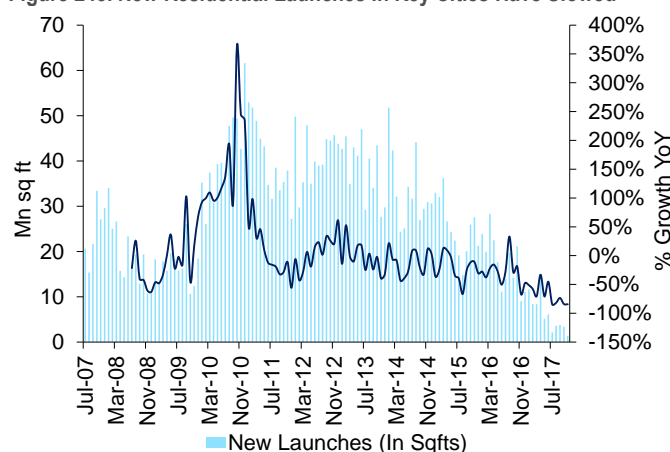
- **Huge structural opportunity:** The property sector in India has been a huge opportunity given alignment of several structural factors: (1) a burgeoning population; (2) changing social structures — increasing number of nuclear families and young population leading to new household formation; (3) continuing urbanization; and (4) acute shortage of housing — estimated at 18.78 million households in 2012.

### Challenges for the Sector

The real estate sector has taken a knock over multiple years due to high starting valuations, execution delays, stressed balance sheets of developers, increasing interest burden (driven both by increasing debt and increasing interest rates), and high cost inflation. This has created a situation of unusually high unsold inventory with the developers which is acting as a disincentive for further investment.

- **Funding difficulties:** Loan growth to the sector has slowed since 2011. Housing mortgage loan growth has slowed to low teens now from peak of ~18% YoY growth in May 2011. Similarly commercial real estate loans (to developers) have slowed to low single-digit growth. Difficulty in obtaining debt or equity funding has led to balance sheets getting stretched over the past few years. This also led to an increase in interest burden.
- **Cost pressures have also mounted:** Input costs (cement/steel) in the sector have shot up, especially since 2009 along with lack of availability of labor. This has squeezed margins of developers; especially in affordable housing segment where scope to pass-on increasing costs is limited.
- **High input costs and funding difficulties have led to execution delays:** Delays in execution have led to a slowdown in new launches, with the companies looking to exhaust their pipeline before launching new projects. New launches in the recent past have also been impacted by certain regulatory changes.

Figure 245. New Residential Launches In Key Cities Have Slowed



Source: Prop Equity, Citi Research

Figure 246. Residential Absorption In Key Cities



Source: Prop Equity, Citi Research

- **Residential absorption is declining:** Residential absorption rebounded sharply after the November 2008 lows (Great Financial Crisis) through November 2010. However since then, absorption has been declining due to a broader slowdown in the economy and rising interest rates.
- **Hinterland property market appears to be doing better than larger cities:** We believe the property market is doing relatively well in the hinterland, partially because of a very low base compared to larger cities. Anecdotally, in our recent interactions with developers from Northern India, land prices have gone up by as much as 100% over the past 2-3 years driven by a government push on improving local infrastructure.

### Reforms: Many a Small Push Could Get the Cart Rolling

- **Multiple factors coming together:** Demand recovery could be on the horizon over the medium term, driven by (1) improving affordability, (2) push on affordable housing, and (3) RERA rollout.
  - **Affordability has improved:** Price/time correction combined with a decline in mortgage rates has improved affordability. Mortgage rates have declined 150- 200 basis points over the past 12-18 months. Property prices across India have undergone time correction over the past 3 years – ~2% compound annual growth rate in prices since FY14 compared to higher inflation/interest rates.
  - **RERA rollout:** This involves establishing Real Estate Regulatory Authorities (RERAs) and Appellate Tribunals at the state level aimed at greater regulation in the sector. All residential/commercial projects of at least 500 square meters or with 8 apartments will have to be registered with state RERAs before they can be offered for sale. Developers also need to deposit 70% of pre-sales proceeds in an escrow account. RERA roll-out also looks to bring about a time-bound resolution mechanism and penal provisions. We believe RERA should tip scales in favor of larger, more established developers but increases the cost of doing business for everyone – leading to price hikes of ~5-10%.
  - **Government's push on affordable housing:** Guidelines for the Middle Income Group (annual income of Rs0.6-1.8 million) under Pradhan Mantri Awas Yojana (PMAY) will enable a household to get effective subsidy of ~Rs240-250k (~\$3,800) with no cap on ticket size of house price/loan. The subsidy could effectively reduce the upfront price by ~2.5%-5% further resulting in demand push for developers. Recently the Goods & Services tax (GST) rate on under construction property under the governments credit linked subsidy scheme (CLSS) has been reduced to 8% from 12%. This will further reduce the price by ~4% to the buyer resulting in total price saving of 6.5%-9% through interest rate subsidy and GST cut.
  - **PMAY is being rolled out fast:** PMAY is being rolled out quickly on a larger scale, targeted at lower income group quite effectively to achieve the target of Housing for All by 2022. The subsidy component for lower ticket sizes can be as high as 10-20% of property value of Rs1-2 million (\$15k-\$30k). Anecdotal evidence suggests several initial success stories. As of December, the Central Government has released funds of Rs128 billion (\$2.8bn) with construction started in ~1.4 million houses - ~289,000 houses have been completed.

Figure 247. PMAY – Progress (as of Dec 17)

Total number of houses	3,199,267
Total investment (Rs bn)	1,723
Central gov't fund released (Rs bn)	128
Construction started	1,408,537
Houses completed	288,963
Proportion of work started	44%
Proportion of houses finished	9%
Houses occupied/houses completed	86%
Proportion of central assistance released	26%
Central assistance involved/total invest	29%
Central fund released/total investment	7%

Source: PMAY Portal, Citi Research

**Figure 248. CLSS for MIG Details**

Particulars	MIG - 1	MIG - 2
Household Income (Rs mn)	0.6-1.2	1.2-1.8
Interest Subsidy	4%	3%
Maximum Loan Tenure (Years)	20	20
Eligible Loan Amount for Subsidy (Rs mn)	0.9	1.2
Carpet Area (sq meters)	90	110
Discount Rate for Calculating Net Present Value	9%	9%

Source: Ministry of Housing & Urban Poverty Alleviation Government of India, Citi Research

- In the near term, the success of the PMAY scheme in urban and rural areas is likely to determine the investment boost from housing and its ability to create jobs. Over the medium term the income and demographic dynamics will likely make housing and real estate prominent investment drivers.

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## Challenges to be Overcome

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## Forecasts and Uncertainty

### Summarizing the Growth Opportunity

From a panel study of 26 countries from 1950s onwards, we observe that for India to achieve a sustained 8%+ GDP growth the following need to happen

- **Investment growth** to accelerate to 10%+ from mid-single digits currently;
- **Labor productivity** to improve to over 6% from current levels of little over 4%;
- **Total factor productivity** to pick up to 3% from current levels of below 2%; and
- India's **low per capita GDP** (at <\$10,000 in PPP terms) and the convergence paradigm could facilitate India's bid to reach 8% growth, but mid-income traps have to be avoided.

### Double Digit Investment Growth and the Financing of it

The catalysts that could help investment recovery are dissipating headwinds of corporate leverage, resolution of banking sector NPA problems, supportive global conditions, the low and stable interest rate regime, return of profitability and animal spirits, and finally sustained reforms

An outcome of double-digit investment and GDP growth reaching 8% over the next decade could be the following:

- **Nominal GDP** to rise from \$2.2 trillion in FY17 to \$6.8 trillion in FY27;
- **Per capita GDP** to increase from \$1,765 to \$4,800 pushing India from lower-middle income to upper-middle income group;
- **Investments** to rise from around 30% of GDP in FY17 to around 35% of GDP in FY27;
- **Total investments** could increase from \$0.7 trillion annually to ~\$2.4 trillion over next 10 years;
- Share of private corporate sector investment to rise from \$272 billion to \$905 billion; Households investments to rise from \$228 billion to \$834 billion; Public investments could rise from \$157 billion to \$563 billion;
- Domestic savings to be the predominant source of financing of these investments;
- Households sector contributing around \$1.5 trillion in FY27 vs. \$0.4 trillion in FY17; private corporate sector rising to \$0.7 trillion in FY27 from \$0.3 trillion currently; and
- Keeping with the savings investment gap identity, the **current account deficit** could rise to \$82 billion (~1.2% of GDP) in FY27 from \$15 billion in FY17

## Drivers and Composition of Growth by Sector

For India to industrialize further and raise manufacturing share of GDP to 25% by 2025 from 18% currently, the sectors that hold promise in terms of optimal labor absorption include textiles and apparels (with a focus on quality), food processing (with rapid modernization) and chemicals including pharma and petrochemicals (among capital-intensive industries) among others.

## Financing the \$3 Trillion Infrastructure Opportunity

Total infrastructure investment is projected at \$3 trillion over next 10 years with investment projected at 6.5%-7% of GDP. Private sector financing is projected at \$1.4 trillion and public sector at \$1.7 trillion. Within the private sector, debt financing could be \$1.03 trillion distributed across bank credit \$369 billion, insurance \$161 billion, infrastructure non-banking financial companies (NBFC) \$204 billion, and external commercial borrowing (ECB) \$25 billion.

## Outcome Targets in Infrastructure

- **Power:** The Government of India targets to provide electricity connections to the ~40 million un-electrified households by March 31, 2019 which could add demand of 28 GW. Also targets solar power addition of 100GW, 60GW of wind power capacity, 10GW of biomass and 5GW of small hydro capacities by 2022.
- **Roads:** Government has an ambitious mega plan to develop 83,677km of roads at an investment of Rs6.92 trillion (\$108bn) over the next five years.
- **Railways:** Indian Railways plan to invest \$310 billion over the next decade to convert 10,000kms of passenger and freight trunk routes to High Speed Rail Corridors.
- **Ports and Inland waterways:** Under the government's flagship Sagarmala program, 415 projects at an estimated investment of approximately Rs8 trillion (\$124bn) have been identified, to be implemented over the period 2015 to 2035.
- **Telecommunications:** India currently has close to 200 million 4G subscribers and 4-5GB/month usage. We estimate that this would go up to ~700 million 4G subs and 18GB/month usage by 2023.
- **Oil & Gas:** Government setting a target of increasing the share of gas in India's total energy mix to 15% by 2030 vs. 6.5% currently. Also to increase the current pipeline network of ~16,000kms, by an additional ~15,000kms
- **Coal:** Coal India had an ambitious production target of 1 billion tons of coal production from current levels of 600mt by FY20.
- **Steel:** The National Steel Policy 2017 aspires to achieve 300MT of steel-making capacity by 2030 (capacity as of January 2017 ~125mt). Increase per capita steel consumption to the level of 160kgs by 2030 from ~60kg.

## The Exports Scenario

Exports as a productivity driver and employment creator could play a significant role in TFP growth. If India can increase its exports-to-GDP ratio (including service exports) to at least 20%, then by 2021 India's exports could reach ~\$700 billion from ~\$350 billion now. This could be further doubled to \$1.5 trillion over next five years if the exports-to-GDP ratio can be pushed up to 22%.

## Growth Impact & Outcome

- **Urbanization:** As GDP growth rate heads towards 8%, India's urbanization rate could likely improve to 40% by 2030-31 from the current 31% level. Around 250 million people could get added to India's cities, taking the total urban population to 600 million but 50% of the increase in urban population to happen in seven least developed states. This is likely to enhance the total contribution of cities in national GDP to around 70 percent by year 2030
- **Consumption Patterns:** Given the trends in retail per capita, substantial growth opportunity exists in home care, personal care and food & beverage segment including packaged foods. Within discretionary categories like autos, we should see a catch up or mean reversion happening in vehicle penetration in poorer states. Convergence in poorer states could increase demand of two-wheelers by 70 million to current market of 160 million and 6.7 million passenger vehicles to the current market of 32 million.

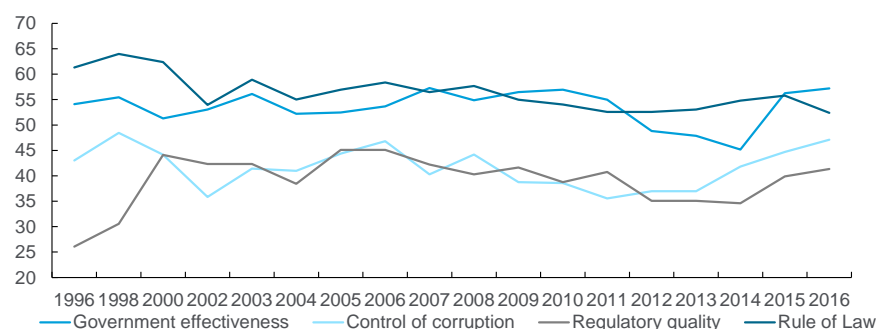
## Pitfalls to be Avoided

Although we remain optimistic that achieving and sustaining 8% GDP growth is in the realm of possibilities, it is in no way guaranteed. Below we provide a quick summary of pitfalls which India needs to avoid in the process of aspiring for higher growth – some of these have been discussed in greater detail earlier.

- **Creating jobs:** There is no doubt that managing the transformation from agrarian to non-agrarian jobs, providing productive/formal sector employment opportunities to the youth, and improving labor force participation rate (particularly female and youth) would be critical in exploiting the demographic dividend. However, the inability to create jobs in an age of automation could potentially destabilize the social fabric.
- **Reducing income inequality:** Some of the recent studies indicate that income inequality has worsened in India over the last three decades. It is not uncommon for EM countries to witness higher income inequality at their high growth phase but it is important to contain it as growing inequality could have adverse socio-political ramifications, in the end dragging growth down.
- **Creating administrative and bureaucratic capacity:** Large-scale bureaucratic reforms will be needed as the Indian government is likely to be significantly involved not only in administering the policy framework for boosting growth but also in the redistribution of the fruits of higher growth. India has mostly been stuck in the middle ranking on the different World Bank governance and rule of law indicators for the past couple of decades. With growing per capita income, the demand for better administrative capacity would increase and inability to provide that could pull down India's growth potential.



Figure 249. India's Ranking in Governance Indicators Middle of the Fray



Source: Worldwide Governance Indicators, Citi Research, The chart depicts India's percentile rank, higher the better

- **Legal reforms and stability/predictability of law:** The next generation of reforms in India should also focus on legal reforms. The Economic Survey 2017-18 notes that there are 3.5 million pending cases in different High Courts with average level of pendency for economic cases between four to six years. Long delays in getting justice could temper investor appetite for India, particularly if the legal framework is also in a process of continuous churn.
- **Democracy and political stability:** While democracy has traditionally been thought to be an essential pre-requisite for sustained growth, the inevitability of year-long elections (center, states, local bodies) can often take its toll on growth-oriented policymaking. Decision making in a democracy can also be relatively slow as a variety of stakeholders views have to be accommodated. Although India has witnessed remarkable political stability in the last two decades with all the four governments running their entire term, it is by no means guaranteed. The pace of growth could get significantly hampered if a minority government comes to power. However, on the positive side, most of the political parties have shown continuity in reforms and policies despite their ideological differences.

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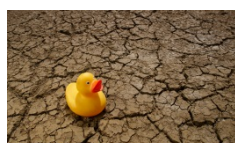
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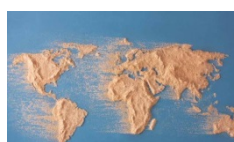
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### **2017 Corporate Finance Priorities**

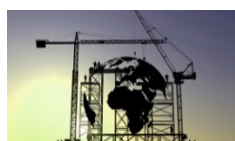
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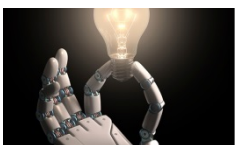
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# NOW / NEXT

## Key Insights regarding the future of India's economic growth



### INFRASTRUCTURE

On average from 1999-2011 India spent 4.75% of its GDP on infrastructure investment curtailed by stretched government finances, onerous land acquisition laws, and stringent environmental clearances. / **For India to sustain 8%+ GDP growth infrastructure spend in the next 10 years needs to be in the \$3 trillion range which would push its infrastructure-to-GDP ratio to 6.5-7% or 20% of total investment.**



### URBANIZATION

Only one third of India's population currently lives in urban areas, which is much lower than the share of urban population in other major emerging economies such as China (57%), Indonesia (55%), and Brazil (86%). / **As GDP heads toward 8%, India's urbanization rate could likely improve to 40% by 2030-31, adding 250 million people to India's cities.**



### LABOR MARKET

Given its population of 1.25 billion, India enjoys a demographic advantage with a relatively young population and a working age population of 880 million, more than twice the U.S. population. / **With an annual growth rate of 1%+, the working age population in India is likely to overtake China's working age population in the next 10 years.**



