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Rural India

State-wise divergences evident in recovery phase

Rural India

Rural India's economic recovery post the COVID-19 pandemic has been a much debated topic over the past year, and rightfully so. Accounting for ~45% of the country's GVA, the rural economic recovery bodes well for corporate revenues and the Indian economy as a whole. Our report is a bottom-up analysis of the Indian rural economy by looking at state-specific rural characteristics and performances. We have analyzed the district-wise GDP, sectoral contribution, and per capita income of 308 rural districts across nine key Indian states, to better understand each region's sectoral contribution and respective growth drivers. These districts cumulatively account for ~70% of the rural economy's GDP. Although agriculture accounts for only ~40% of total rural GVA, it still remains synonymous with rural India. In our report, we have endeavored to give equitable importance to the two burgeoning segments of rural economy viz. manufacturing and services. While most states paint a bright picture about rural recovery, ~42% of the rural population of country is yet to reach its previous pre-covid peak earning capability. Our proprietary rural demand predictive model is indicating a steady recovery from current below-trend levels. Our analysis has yielded the conclusion that the states where the overall rural economy has been performing well and is expected to continue doing so are Andhra Pradesh, Karnataka, Madhya Pradesh, and Tamil Nadu. A few of the key consumer-facing companies in the HSIE coverage universe with a strong presence in these geographies are TVS, Bata, M&M Finance, Cholamandalam Finance, REPCO Home Finance, and City Union Bank.

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INSTITUTIONAL RESEARCH

Rural India

State-wise divergences evident in recovery phase

Rural India's economic recovery post the COVID-19 pandemic has been a much debated topic over the past year, and rightfully so. Accounting for ~45% of the country's GVA, the rural economic recovery bodes well for corporate revenues and the Indian economy as a whole. Our report is a bottom-up analysis of the Indian rural economy by looking at state-specific rural characteristics and performances. We have analyzed the district-wise GDP, sectoral contribution, and per capita income of 308 rural districts across nine key Indian states, to better understand each region's sectoral contribution and respective growth drivers. These districts cumulatively account for ~70% of the rural economy's GDP. Although agriculture accounts for only ~40% of total rural GVA, it still remains synonymous with rural India. In our report, we have endeavored to give equitable importance to the two burgeoning segments of rural economy viz. manufacturing and services. While most states paint a bright picture about rural recovery, ~42% of the rural population of country is yet to reach its previous pre-covid peak earning capability. Our proprietary rural demand predictive model is indicating a steady recovery from current below-trend levels. Our analysis has yielded the conclusion that the states where the overall rural economy has been performing well and is expected to continue doing so are Andhra Pradesh, Karnataka, Madhya Pradesh, and Tamil Nadu. A few of the key consumer-facing companies in the HSIE coverage universe with a strong presence in these geographies are TVS, Bata, M&M Finance, Cholamandalam Finance, REPCO Home Finance, and City Union Bank.

Key takeaways:

- **Agriculture & allied services:** Livestock segment is growing faster than crop production and has gained critical mass, promising to be a reliable rural economy driver**.** Since gross cropped area has been flat, volume growth in crop production has solely been led by limited yield improvement of the cultivated area. This coupled with modest crop price increases indicate constrained income growth for farmers. Supported by conducive government policies, crop production in **Madhya Pradesh** and aquaculture in **Andhra Pradesh** are prospering.
- **Services:** Improving rural **credit growth**, **employment** and rising **freight prices** are driving growth in key segments of trade, hotel & restaurants and real estate. The rural service sector enjoys sustainable growth drivers in **Andhra Pradesh, Karnataka, Kerala, Maharashtra and Tamil Nadu.**
- **Manufacturing:** Rural India has attracted~60% of the capital during the current CAPEX cycle due to cheap labour and land abundance. Ongoing projects are expected to create 2.6 mn additional jobs in the next five years. The states with the highest expected rural fixed capital addition are **Gujarat, Odisha, Tamil Nadu, Rajasthan, and Karnataka**

States	Contribution of sectors to state's rural GDP in FY23			Sector scores			Real Income per capita scores	Weighted average rural score
	Agri	Industries	Services	Agri	Industries	Services		
Andhra Pradesh	43%	20%	37%	10.0	3.7	7.0	8.8	8.9
Karnataka	22%	31%	46%	7.1	4.4	7.9	7.2	7.4
Kerala	23%	20%	57%	0.0	0.0	6.8	2.6	3.6
Madhya Pradesh	52%	23%	25%	9.3	2.4	3.8	10.0	8.2
Maharashtra	25%	33%	43%	5.8	3.2	6.8	2.9	5.4
Punjab	41%	26%	33%	3.1	0.6	4.5	0.0	2.6
Rajasthan	35%	28%	37%	6.7	6.1	5.7	5.7	6.9
Tamil Nadu	18%	34%	48%	6.3	10.0	6.3	6.3	8.2
Uttar Pradesh	29%	27%	43%	4.9	0.9	4.9	1.1	3.6

Source: DES of various states, MoSPI, HSIE Research

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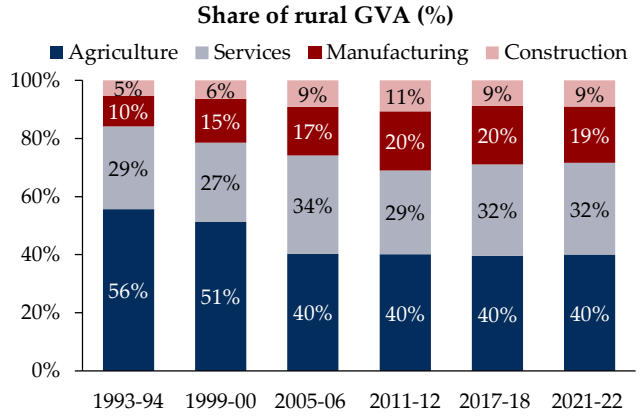
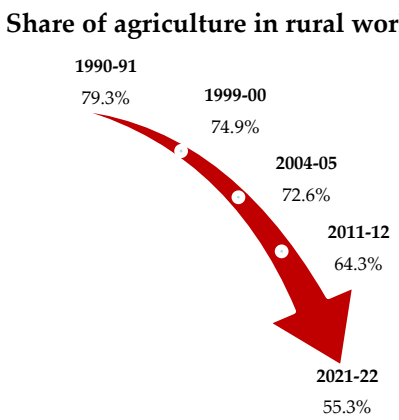
Executive summary

Our report is a bottom-up analysis of the Indian rural economy by looking at state-specific rural characteristics and performances. We have analyzed the rural districts of nine key Indian states that account for ~70% of India's rural GDP, to better understand each region's sectoral contribution and respective growth drivers. The report has been divided into four main sections; agriculture, services, industries, and rural income recovery.

Exhibit 1: Agriculture is no longer synonymous with rural India; imperative to analyse rural services & industry



Source: CMIE, CSO, HSIE Research

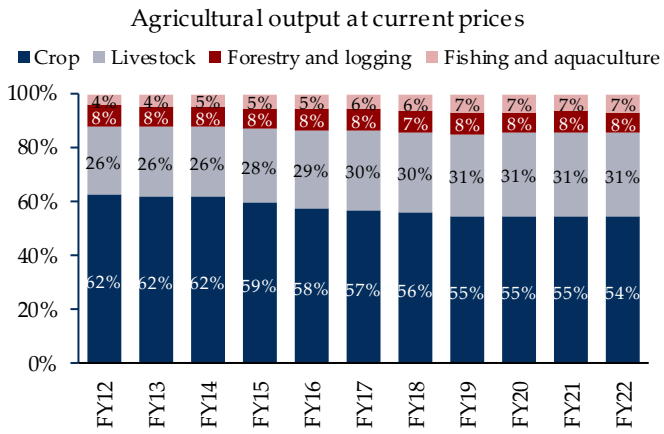


Source: NSSO, CMIE, HSIE Research

Agriculture:

- Although the share of agriculture has been steadily decreasing, it is still the largest contributor to rural GDP.
- Since the constitution of agricultural services have been changing, we have analyzed other elements of the segment besides crop production as well.

Exhibit 2: Crop production losing share to other agricultural contributors; underperformer over the last decade



Source: Agriculture Census, HSIE Research

	Crop	Livestock	Forestry & logging	Fishing & aquaculture	Overall Agriculture & allied
Nominal CAGR (FY12-FY22)	8.6%	12.4%	9.9%	15.5%	10.1%
Real CAGR (FY12-FY22)	2.0%	5.6%	4.2%	8.1%	3.5%
FY22 contribution (nominal terms)	54.4%	31.2%	7.6%	6.8%	100.0%

Source: Agriculture Census, HSIE Research

- **Our research has also highlighted the limiting earning potential of crop production for most farmers.** We have identified the factors of net income growth from crop production for farmers and detailed their limitations in regards to farmer income.
- Pursuant to an economy-wide agriculture analysis, we have carried out state-wise agricultural output analysis. **Our research has led us to the conclusion that Madhya Pradesh and Andhra Pradesh are the two states where the agriculture sector has performed well and is expected to continue doing so.** The conclusions can be found in the following table:

Exhibit 3: State-wise contributors to total agricultural output

	Contribution to state's real Agri output CAGR (FY12-21)				Real Agri Output CAGR (FY12-21)	Bright Spots			
	Crops	Livestock	Forestry and logging	Fishing and aquaculture		Crops	Livestock	Forestry and logging	Fishing and aquaculture
Andhra Pradesh	16%	30%	1%	53%	8.2%	Mango	Meat		Inland fish, marine fish
Chhattisgarh	42%	12%	4%	43%	4.6%			Industrial woods	Inland fish
Karnataka	56%	38%	6%	0%	5.6%	Onion			
Madhya Pradesh	69%	26%	3%	2%	7.6%	Wheat, Potato, Maize, Onion	Milk		
Maharashtra	41%	34%	25%	0%	4.4%	Onion		Industrial woods	
Tamil Nadu	-6%	95%	7%	4%	4.8%	Meat			
Telangana	27%	68%	1%	4%	4.9%	Cotton	Meat		
West Bengal	40%	40%	4%	17%	2.4%	Maize			
Punjab	29%	64%	4%	3%	1.9%				
Kerala	-463%	114%	274%	-24%	-0.9%			Industrial woods	
Rajasthan	17%	77%	5%	1%	5.2%	Cotton	Milk		
UP	61%	27%	6%	6%	3.6%			Industrial woods	

Services:

- We have analysed the top 9 states by rural services that account for ~84% of total rural services GDP. We used a bottom-up approach by analysing the rural districts in all these states to quantify the below-listed services segments of the respective regions and identify the largest segment in each state.
- To understand the rural services sector in more detail, we have identified and analysed the following individual drivers that help propel each service segment:
- Our rural services index summarizes and contextualizes the service sector performance of each of the nine states over the previous 16 quarters.
- **Based on our analysis, the states where the rural service sector has been performing well are Andhra Pradesh, Karnataka, Kerala, Maharashtra, and Tamil Nadu.**

Exhibit 4: Rural services index (scored from 0 to 10)

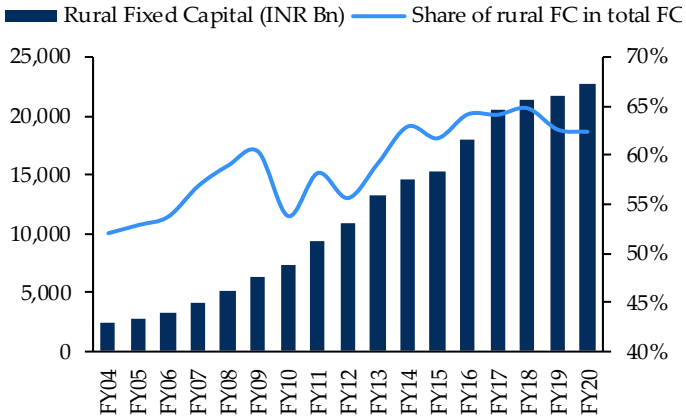
	Andhra Pradesh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh
Q1 FY20	5.8	2.5	5.0	6.1	5.5	5.1	6.1	6.5	7.1
Q2 FY20	5.3	2.8	5.0	5.7	5.1	6.1	5.4	6.0	6.6
Q3 FY20	3.3	2.7	3.2	3.4	4.5	3.8	3.2	3.7	4.2
Q4 FY20	2.1	3.0	2.4	2.3	3.5	2.9	1.8	2.7	2.4
Q1 FY21	1.4	3.2	0.9	0.9	3.2	2.4	0.9	1.9	1.8
Q2 FY21	3.2	4.5	2.2	2.0	4.4	3.7	3.3	4.0	2.9
Q3 FY21	5.3	6.1	2.9	2.9	4.8	5.0	4.5	5.8	3.8
Q4 FY21	6.6	7.1	4.4	4.7	6.3	7.0	6.2	7.2	5.2
Q1 FY22	7.6	5.5	4.7	6.4	5.9	6.4	5.4	7.3	4.6
Q2 FY22	6.6	5.0	3.8	6.0	5.9	5.2	4.5	5.3	4.8
Q3 FY22	4.9	3.6	3.5	7.0	5.5	6.4	4.4	4.3	5.0
Q4 FY22	4.6	4.1	3.5	4.0	5.5	5.8	4.8	4.1	4.6
Q1 FY23	5.3	5.7	5.4	3.5	6.1	4.3	5.8	5.0	5.6
Q2 FY23	6.0	7.1	6.4	3.6	6.2	6.0	6.3	5.8	5.8
Q3 FY23	6.4	8.0	6.3	3.7	6.6	4.9	5.6	5.7	5.0
Q4FY23	7.0	7.9	6.8	3.8	6.8	4.5	5.7	6.3	4.9

Source: DES documents of various states, CMIE, MOSPI, HSIE Research

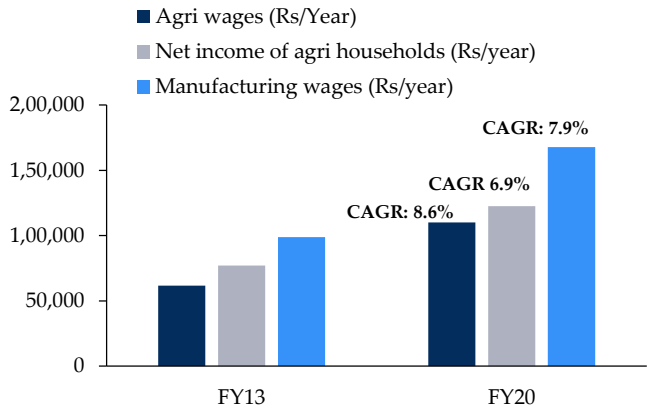
Manufacturing:

- Rural India accounts for a majority of the country's manufacturing; 55% of the economy's, manufacturing GVA and 63% of India's manufacturing fixed capital.
- Our research indicates that manufacturing wages have outperformed both agricultural wages and net income of agricultural households over the past decade.

Exhibit 5: Rural India accounts for the majority of fixed capital in India



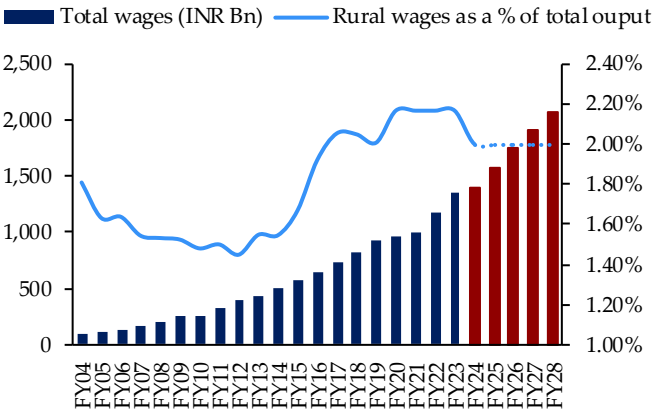
Source: ASI, HSIE Research



Source: NSSO, CMIE, HSIE Research

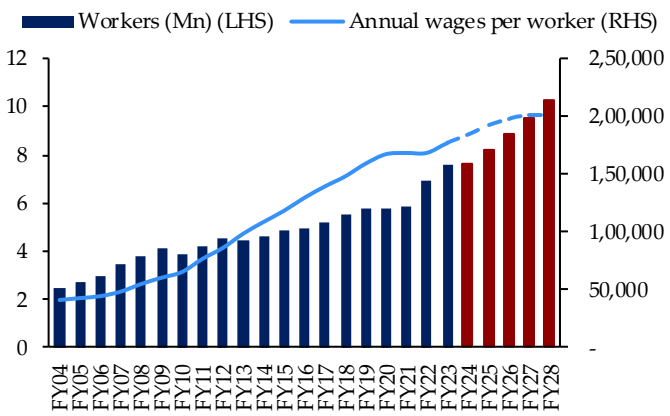
- The total number of under implementation fixed capital in rural India currently stands at ~ INR 13 trn and is expected to be capitalised in the next 5 years. We have highlighted the states and sectors in which these investments are happening.
- Based on the characteristics of rural manufacturing, and other mentioned assumptions, we were able to quantify the annual increase in rural fixed capital and wage pool.
- The states with the highest expected rural fixed capital addition are Gujarat, Odisha, Tamil Nadu, Rajasthan, and Karnataka.

Exhibit 6: Estimated total rural manufacturing wage pool increasing progressively



Source: ASI, HSIE Research

Exhibit 7: Higher rural manufacturing workers and wages per worker to aid rural consumption going forward

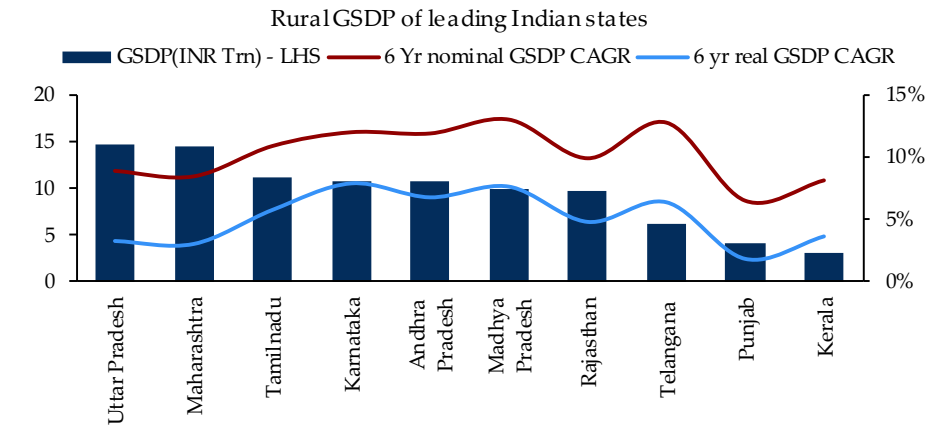


Source: ASI, HSIE Research

Rural income per capita recovery:

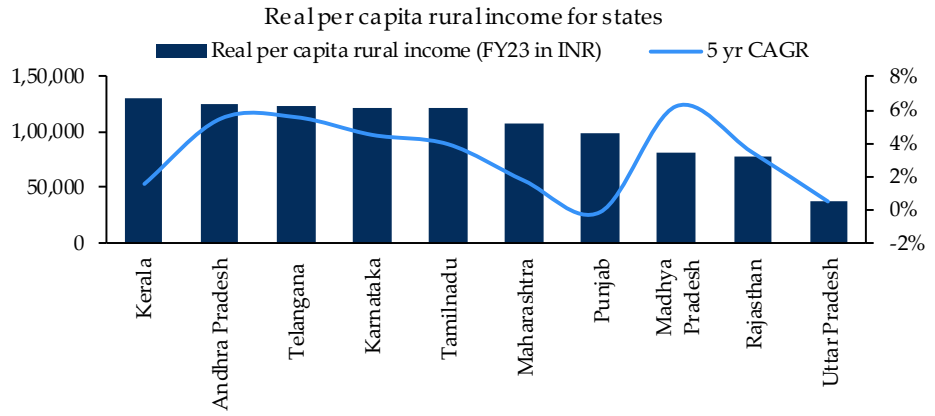
- The final section of our report aims to analyse whether the income per capita of rural districts in key states have recovered to pre-pandemic levels. We have highlighted all these rural districts in our report, along with the major economic activities undertaken in most of them.

Exhibit 8: Contribution of states towards overall rural GDP of India



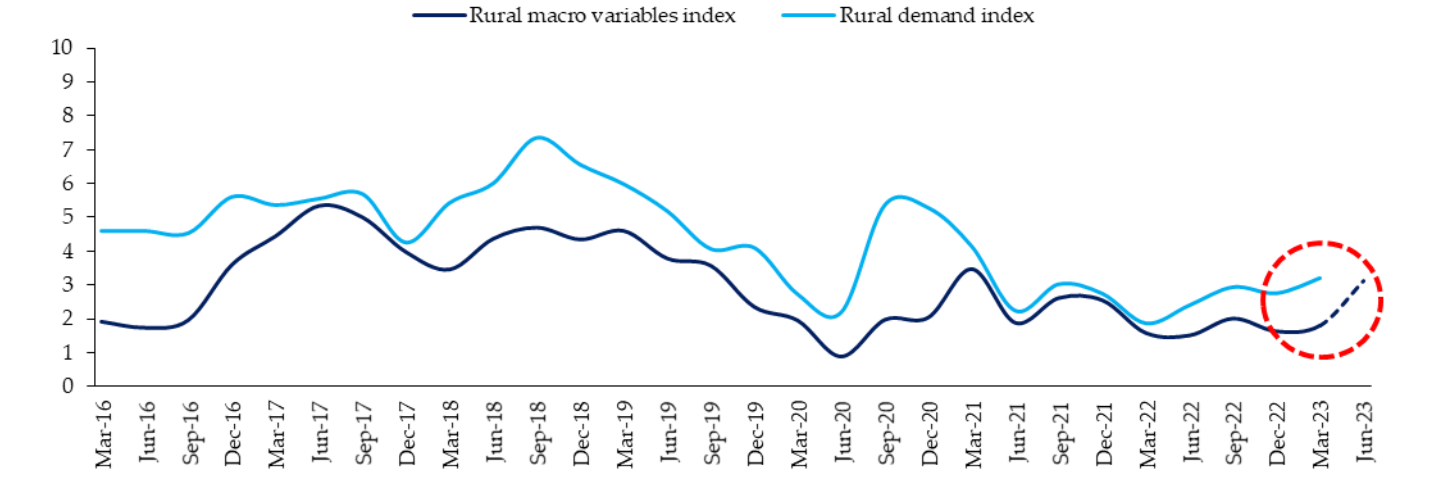
Source: Economic survey, DES of various states, Indiastat database, HSIE Research

Exhibit 9: Real per capita income of rural population of various states in FY23 (Base: Dec'10)



Source: Economic survey, DES of various states, Indiastat database, HSIE Research

Exhibit 10: HSIE rural demand index; an improvement in macro variables to continue driving rural demand recovery

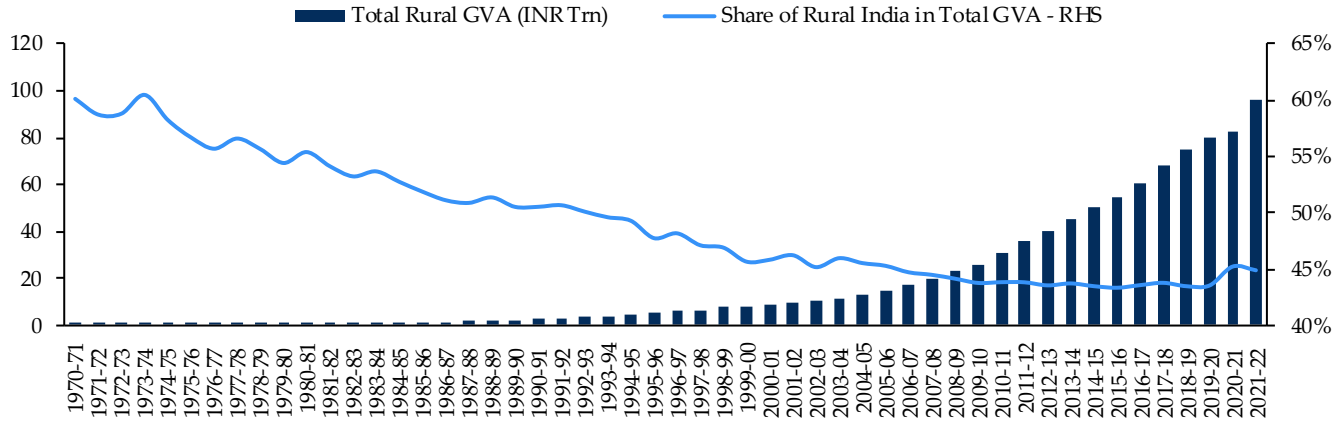


Source: CMIE, MoSPI, HSIE Research

Contents

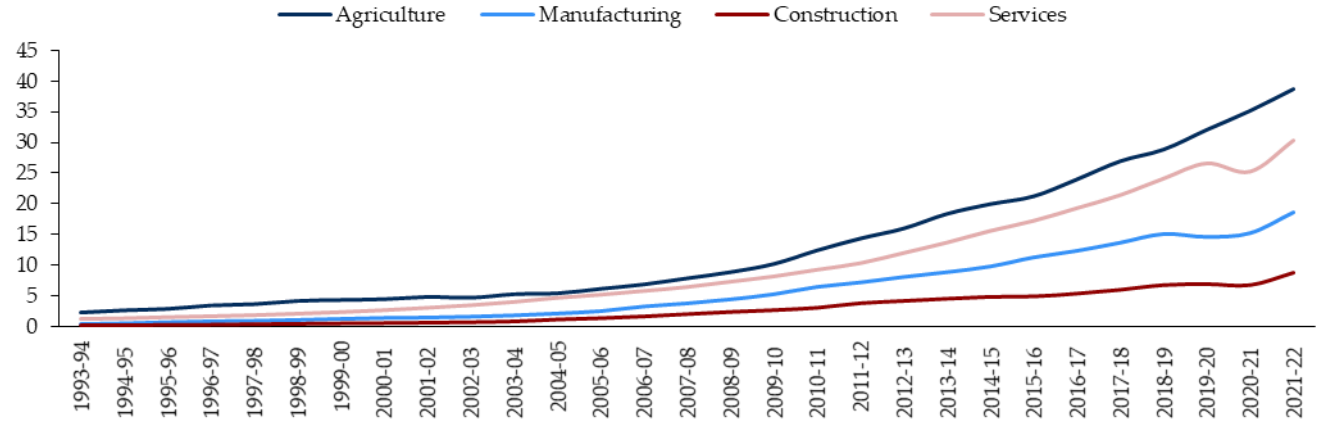
A snapshot of rural India

Exhibit 11: Rural GVA expected to have touched INR 100 trn in FY23; share in total GVA steadily declining



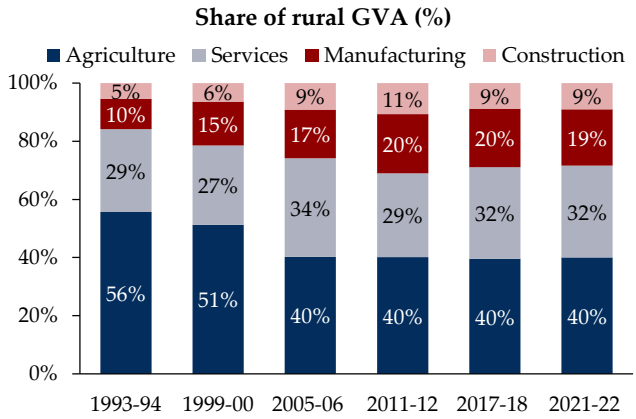
Source: CMIE, CSO, HSIE Research

Exhibit 12: Industry-wise rural GVA (INR trn) trend

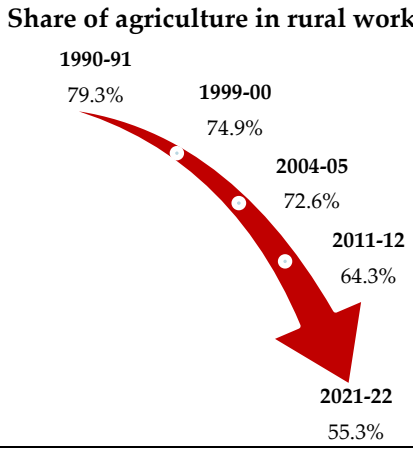


Source: CMIE, CSO, HSIE Research

Exhibit 13: Agriculture is no longer synonymous with rural India; imperative to analyse rural services & industry

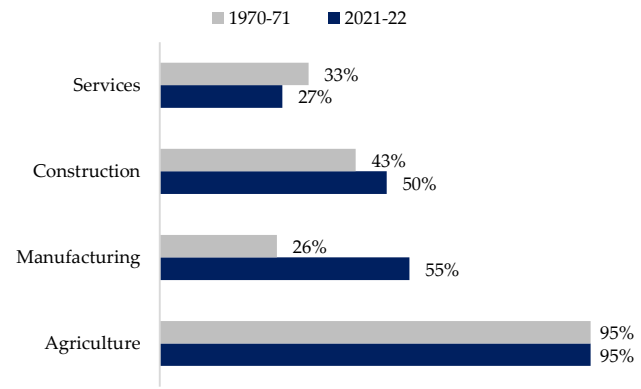


Source: CMIE, CSO, HSIE Research



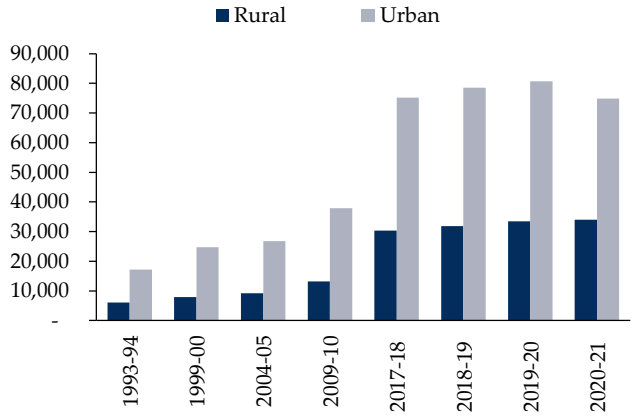
Source: NSSO, CMIE, HSIE Research

Exhibit 14: Estimated share of rural India in industry-wise GVA



Source: CSO, HSIE Research

Exhibit 15: Real GVA per capita (Base year = 1993-94)



Source: CSO, HSIE Research

We have used a bottom-up approach in our report, whereby we have analysed the rural economies of nine key states, to get a more comprehensive understanding of rural India as a whole. As seen in exhibit 16, the sectoral GDP split is varied amongst all states. This is imperative to highlight as the influence of agriculture is mixed across all the states. For example, simply tracking agricultural data points in Tamil Nadu is not enough to understand the state of its rural economy as it only accounts for 18% of the state's rural GDP. Similarly, the agricultural portfolio of each state differs as well, with some states yielding more economic output from livestock than crop production. It has been our endeavour throughout the report to explore these state-specific nuances. The sectoral performances and the contributions shown in exhibit 16 will be used in unison to analyse the rural performance of each of the nine mentioned states.

Exhibit 16: State-wise rural GDP and respective contributions (FY23)

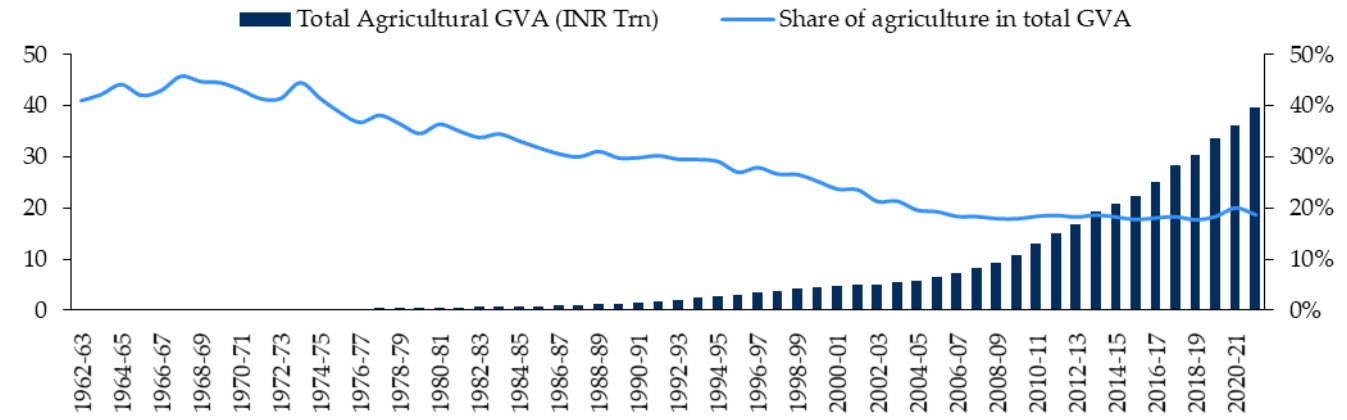
State	Total Rural GDP (INR bn)	Sector-wise rural GDP contribution		
		Agriculture	Services	Industries
India	**1,25,719**	**39%**	**34%**	**27%**
Uttar Pradesh	14,712	29%	43%	28%
Maharashtra	14,400	25%	42%	33%
Tamil Nadu	11,219	18%	48%	34%
Karnataka	10,774	22%	47%	31%
Andhra Pradesh	10,772	43%	37%	20%
Madhya Pradesh	9,803	52%	23%	25%
Rajasthan	9,709	35%	37%	28%
Punjab	4,138	41%	33%	26%
Kerala	3,160	23%	57%	20%
Others	37,032	56%	26%	18%

Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Agriculture & allied services

Agriculture has been the backbone of the Indian economy since its inception. The sector accounts for ~21% of the country's output and employed ~38% of its workforce in FY22 (down from 61% in 1993-94). However, as the economy continues to evolve, the share of the agriculture & allied services sector in headline macroeconomic statistics is bound to decrease. The slower growth of the agricultural segment can be attributed to the continuous land sub-divisions in rural India, a phenomenon primarily driven by population growth and expansion of farmer families. Naturally, as the gross cropped area per household is bound to reduce, so are the operational efficiencies and net income per agricultural household.

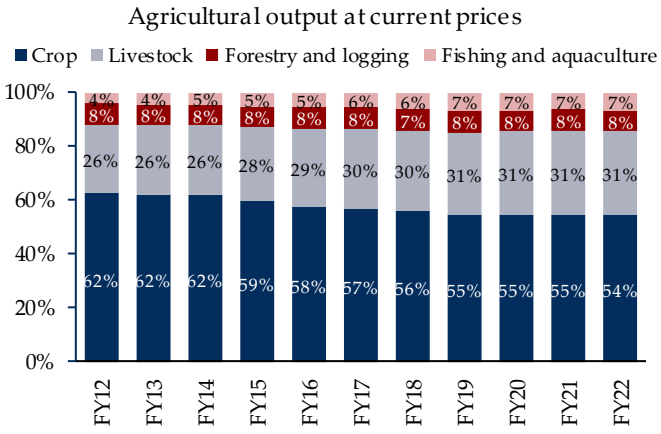
Exhibit 17: Share of agriculture in India's GVA steadily decreasing as the economy's output diversifies



Source: CMIE, HSIE Research

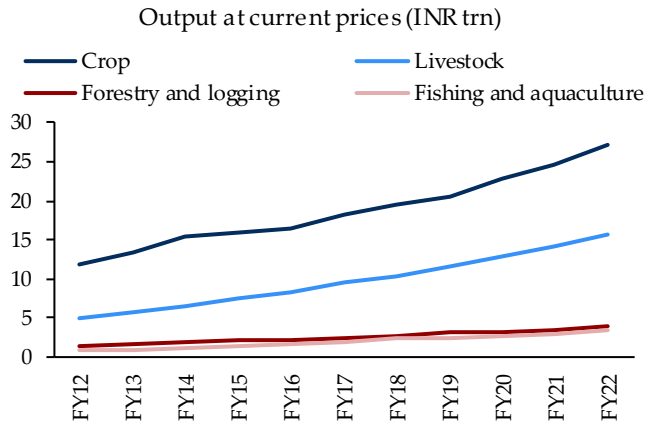
While the chart above shows a clear decline in the contribution of the agriculture & allied services sector to the country's economic output, it would be prudent to analyse the health of its various components. The charts below show the year-wise contributions of various components to the overall agricultural economy.

Exhibit 18: Share of crop production gradually decreasing



Source: Agriculture Census, HSIE Research

Exhibit 19: Livestock slightly outpacing crop production growth



Source: Agriculture Census, HSIE Research

- It is worth highlighting that the contribution of crops has been consistently decreasing, while livestock's contribution has been gaining strength over the years.
- This can be attributed to the simple fact that the growing rural population is leading to family expansions and, hence, land divisions. As crop production requires a certain minimum amount of land to make the occupation economically viable, the diminishing per-household landholding is acting as a ***structural headwind*** for the sector. Many farmers

are opting for alternate occupations to support their families due to declining profitability and the economic non-viability of crop production. The segment has clearly lagged growth over the years as compared to the overall sector (exhibit 20)

- Furthermore, the "livestock" segment, which constitutes of the milk group, meat group and eggs, enjoys a ***structural tailwind*** due to the natural population growth of cattle, which acts as a primary revenue driver. The segment has recorded faster growth than the overall agri sector (exhibit 20).

- Fishing & aquaculture, which still is a small contributor (6.8%) to the overall agri & allied sector, has grown at an impressive 15.5% over the last 10 years. This segment is worth monitoring as it could gain critical mass over the next few years and become a meaningful contributor. Andhra Pradesh, Tamil Nadu, and West Bengal are leading producers of inland and marine fish.

- The nominal and real growth of these sub-sectors over 10 years (between FY12 and FY22) can be observed in the table below. Crop production, the dominant contributor, has not kept pace with the overall agriculture sector, which has been uplifted by the other three segments.

Exhibit 20: Agriculture & allied services' CAGR from F12 to FY22

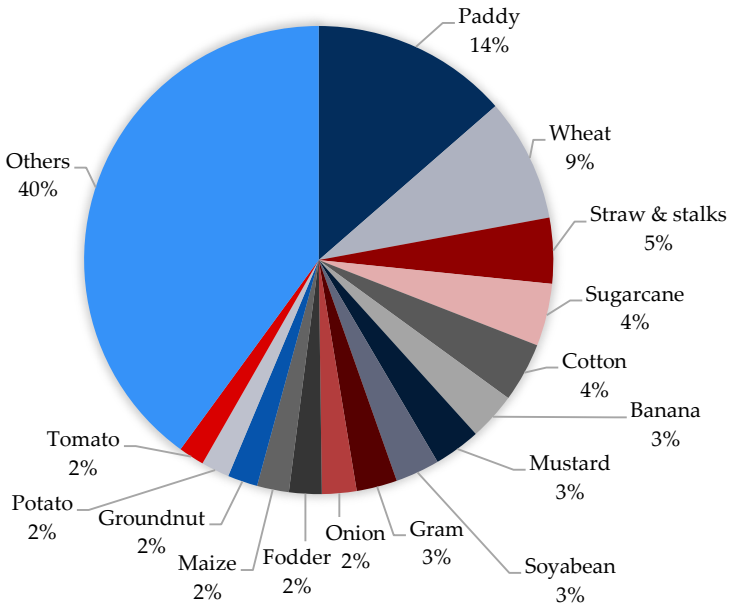
	Crop	Livestock	Forestry & logging	Fishing & aquaculture	Overall Agriculture & allied
Nominal CAGR	8.6%	12.4%	9.9%	15.5%	10.1%
Real CAGR	2.0%	5.6%	4.2%	8.1%	3.5%
FY22 contribution (nominal terms)	54.4%	31.2%	7.6%	6.8%	100.0%

Source: Agriculture Census, HSIE Research

As ~85% of overall "agri & allied" sector is contributed by "crop production" and "livestock", it is important to analyse these subsectors deeply.

Crop production

Exhibit 21: Crop production output in FY22: INR 27.2 trn (in nominal terms)



Source: Agriculture Census, HSIE Research

- As seen in the chart above, crop production in India is quite diversified depending upon geographical crop preferences, demand, land availability and fertility of agricultural land.

- Key crops produced in the country are paddy, wheat, straw, sugarcane, cotton, potato, banana, gram and onion.
- It is worth highlighting that the top 5 contributing crops viz. paddy, wheat, straw & stalks, sugarcane and cotton (accounting for 36% of overall production) didn't grow at remarkable rates in the previous 10 years (please refer exhibit 22), which is a reflection of occupation viability related difficulties faced by producing farmers.

Exhibit 22: CAGR of major crops from FY12 to FY22

	Nominal CAGR	Real CAGR	% Contribution (FY22)
Paddy	8.0%	2.1%	14%
Wheat	7.0%	1.2%	9%
Straw & stalks	7.3%	0.5%	5%
Sugarcane	6.9%	2.2%	4%
Cotton	3.7%	-1.6%	4%
Banana	13.6%	5.0%	3%
Mustard	14.7%	5.4%	3%
Soyabean	11.4%	0.5%	3%
Gram	13.4%	6.2%	3%
Onion	16.9%	7.9%	2%
Fodder	6.5%	-0.2%	2%
Maize	9.8%	4.3%	2%
Groundnut	8.7%	3.6%	2%
Potato	9.6%	3.4%	2%
Tomato	9.0%	1.1%	2%
Overall crops	8.6%	2.0%	100%

Source: Agriculture Census, MoSPI, HSIE Research

- The unviability of production economics, dependence on erratic monsoons and lack of automation in production are the key reasons behind this muted performance of key mentioned crops. The following tables highlight the top five states by production value for 4 key agricultural crops.

Exhibit 23: Top 5 paddy producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
West Bengal	12.4%	1.4%
Uttar Pradesh	12.3%	1.1%
Punjab	10.9%	2.8%
Telangana	8.2%	8.0%
Odisha	6.7%	4.7%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

Exhibit 24: Top 5 wheat producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Uttar Pradesh	31.9%	1.8%
Madhya Pradesh	18.4%	5.2%
Punjab	15.6%	-0.1%
Haryana	11.2%	-0.3%
Rajasthan	9.5%	1.9%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

Exhibit 25: Top 5 sugarcane producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Uttar Pradesh	44.3%	3.3%
Maharashtra	21.0%	2.8%
Karnataka	13.8%	1.3%
Gujarat	5.3%	1.3%
Tamil Nadu	2.8%	-10.1%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

Exhibit 26: Top 5 cotton producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Maharashtra	28.1%	3.8%
Gujarat	18.7%	-5.5%
Telangana	16.8%	4.2%
Rajasthan	9.4%	7.1%
Karnataka	7.4%	6.9%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

To summarise, crop production, which is a dominant segment of the overall agriculture sector, has grown only at ~2% real growth rate in the 10-year period of study, thereby limiting the earning potential for 94 mn agricultural households. As a large powerful growth engine such as "crop production" has slowed down, this definitely doesn't bode well for the overall country's rural economy. In the next section, we have analysed this problem further to ascertain the cause of the issue.

Crop production—limited earning potential for most farmers

The key crops in India are paddy, wheat, maize and cotton; they cumulatively account for ~31% of the total crop production value in India. As per the NSSO 77th Round survey, each of these mentioned crops is produced by more than 50% of rural households of the country. Therefore, we have considered these four as representative crops to understand the business economics of the sector and highlight the income-generating performance of the farmers.

Real net income growth earned from crop production can only grow from three possible sources:

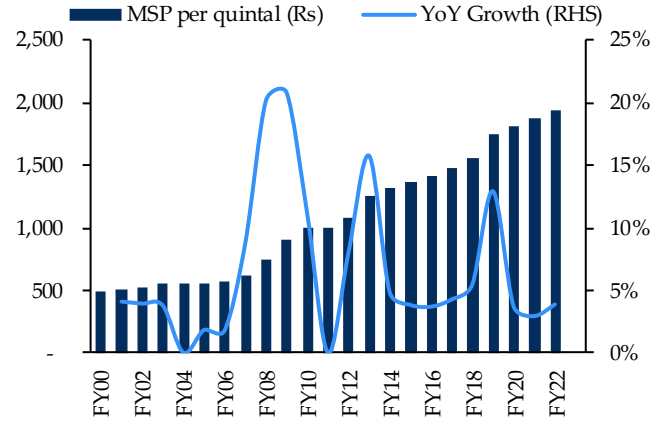
1. Growth in the selling price of crops
2. Growth in volumes of crops produced
3. Improvement in unit economics for farming households, thereby leading to margin expansion for crop production

We will be individually exploring how each of these factors has fared over the years from the lens of aiding farmer income growth.

1. Growth in the selling price of crops

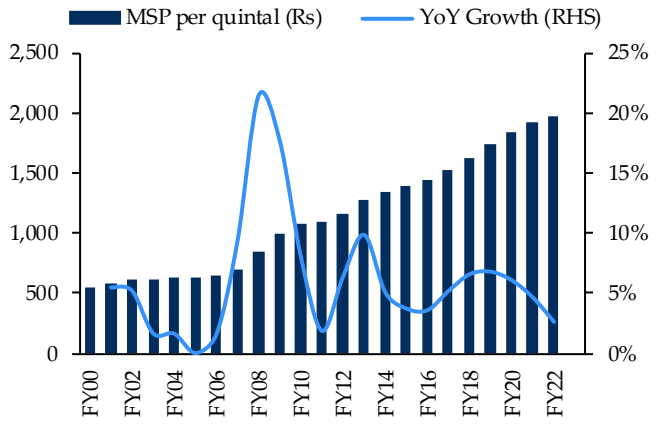
- We use the minimum support price (MSP) to assess the selling prices of crops. According to the NSSO's latest survey round, <1% of agricultural households that did not sell to procurement agencies under the MSP, did so because they received higher prices in the open market. So for all intents and purposes, the MSP usually acts as the average selling price for the major crops in India.
- For our representative crops, the trend of historical MSPs can be observed in the charts below:

Exhibit 27: MSP – Paddy



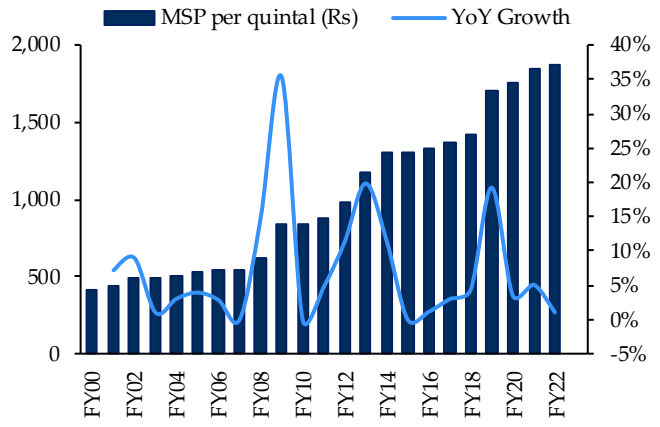
Source: CMIE, HSIE Research

Exhibit 28: MSP - Wheat



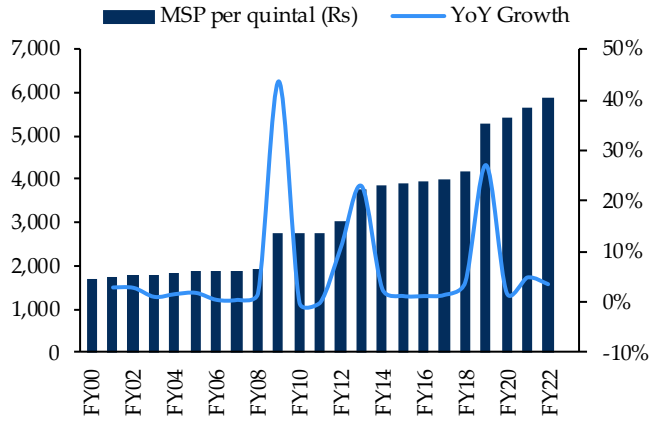
Source: CMIE, HSIE Research

Exhibit 29: MSP – Maize



Source: CMIE, HSIE Research

Exhibit 30: MSP—Cotton



Source: CMIE, HSIE Research

Exhibit 31: Temporal comparison of MSP CAGRs to rural inflation

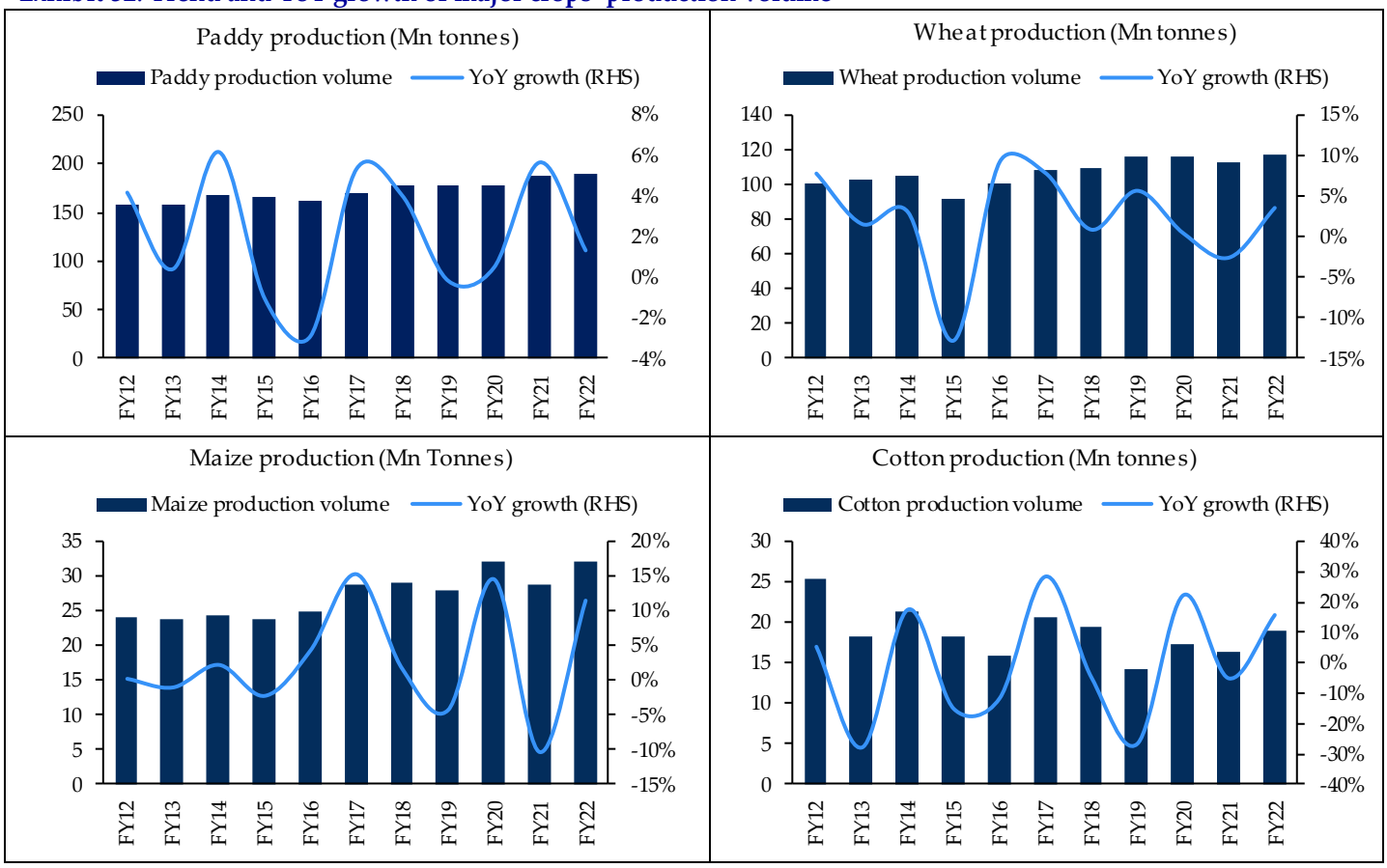
Years	Paddy	Wheat	Maize	Cotton	Rural Inflation
FY00 – FY08	5.4%	5.6%	5.1%	1.7%	3.6%
FY08 – FY14	9.9%	8.0%	13.3%	12.3%	10.4%
FY14 – FY22	5.0%	4.9%	4.5%	5.4%	5.0%

Source: CMIE, HSIE Research

- The table and graphs above suggest that MSP growth rates for paddy, wheat and maize have been marginally higher than the rural inflation rates between FY00 and FY08. MSPs grew handsomely between FY08 and FY14, supported by government policies. However, the MSPs of key cereals such as paddy and wheat weren't able to outpace elevated rural inflation in the same period. Maize and cotton MSPs were slightly higher than the inflation in this period. Moreover, growth in prices has been in line with rural inflation since FY14. Evidently, real growth from price increases has been minimal for some time now and near negligible for the past eight years. Price-led growth has been ineffective and has led to an erosion in the real purchasing power of farmers.
- Government policy regarding increasing MSPs is naturally constrained. Higher MSPs will translate to higher food prices, invariably leading to inflationary pressure throughout the economy. Hence there is a limit to which MSPs can be increased every year. Therefore, any potential growth in real production value in the aforementioned time period had to come from an increase in production volumes.

2. Growth in production volume of crops

Exhibit 32: Trend and YoY growth of major crops' production volume



Source: CMIE, DES, HSIE Research
Note: FY22 numbers are based on the latest advanced estimates

Exhibit 33: Temporal comparison of production volume CAGRs

Years	Paddy	Wheat	Maize	Cotton
FY00 – FY08	0.0%	1.5%	4.7%	10.2%
FY08 – FY14	2.5%	1.5%	2.6%	5.6%
FY14 – FY22	1.6%	1.3%	3.5%	-1.5%

Source: CMIE, HSIE Research

- As seen in the graphs and table above, production volume growth for most crops in the period FY00-FY22 was extremely subdued. Maize production growth between FY00 and FY14 was relatively buoyant due to impetus by specific producing states. We will further analyse the reasons behind these subdued production volume growth figures.
- According to us, the two key drivers behind the production volume of the mentioned crops are "gross cropped area" and "yield per hectare"; we will be analyzing these trends shortly after.
- Gross cropped areas for all crops have not shown any meaningful growth in the last decade. This goes in accordance with our thesis that the arable land availability per farmer isn't growing due to the natural expansion of families of farmers leading to land divisions. This trend is expected to be continued in the foreseeable future.
- Furthermore, yield per hectare for paddy, wheat and maize has shown decent growth in the last decade and we hypothesize that this is the main factor driving production volume growth as the other factor "gross cropped area" hasn't contributed much so far. A simple regression analysis between

a 9-year CAGR of yield per hectare and production volume throws a coefficient of determination (R square) value of a staggering 90.4% proving our hypothesis.

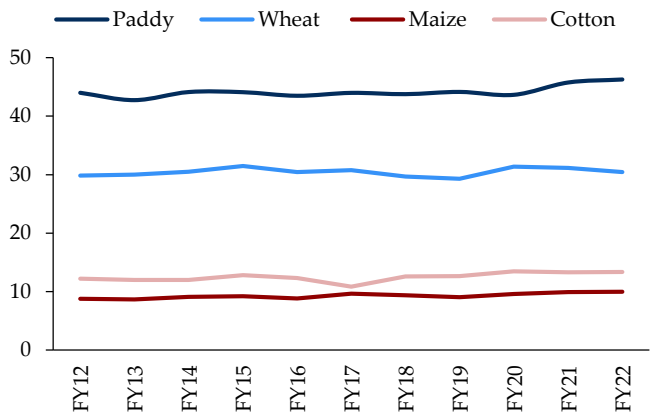
- We opine that although production volume growth is being led by yield growth so far, there is a limit to which yield can grow using automation, usage of pesticides, irrigation etc. Eventually, this can't grow at high rates sustainably and hence production growth of key crops is at risk.
- We summarise that annualized compounded production growth rates of key crops are not adequate to supplement meaningful farmer income growth.

Exhibit 34: Driving forces behind production volume growth; yield per hectare & gross cropped area

CAGR (FY12-FY21)	Paddy	Wheat	Maize	Cotton
Yield per hectare	1.4%	1.1%	2.9%	-0.9%
Gross cropped area	0.4%	0.4%	1.1%	0.8%
Production volume	2.0%	1.3%	2.0%	-4.7%

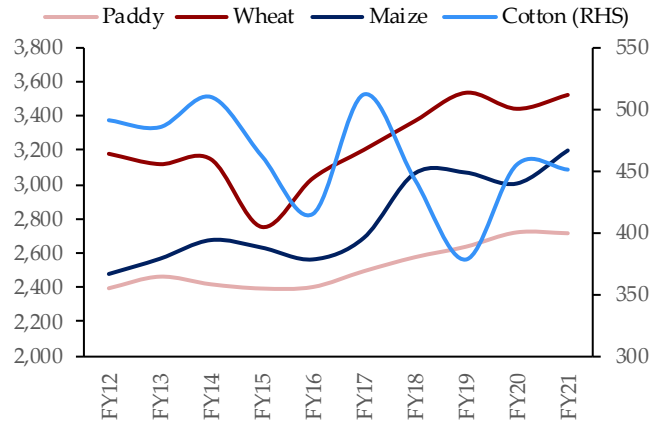
Source: CMIE, MoSPI, HSIE Research

Exhibit 35: Gross cropped area (mn hectares)



Source: CMIE, HSIE Research

Exhibit 36: Yield per hectare (kg/hectare)



Source: CMIE, HSIE Research

We will now combine production volumes and yearly price levels to get a holistic view on the gross income earned by farming these major crops.

Exhibit 37: Temporal comparison of production value CAGRs to rural inflation

Years	Paddy	Wheat	Maize	Cotton	Rural Inflation
FY00 – FY08	5.3%	7.2%	10.1%	12.0%	**3.6%**
FY08 – FY14	12.6%	9.6%	16.2%	18.6%	**10.4%**
FY14 – FY22	6.7%	6.3%	8.2%	3.8%	**5.0%**
FY22 production Value (INR trn)	3.7	2.3	0.6	1.1	

Source: CMIE, HSIE Research

- We observe that value growth for paddy and wheat rose between FY08 and FY14, led by a sharp rise in their MSPs with minimal support from production growth. Maize and cotton being smaller contributors in the overall crop basket grew faster on both fronts, namely volume and price, resulting in remarkable value growth.

- Growth in crop production value has heavily moderated from FY15 onwards. Growth in MSPs has been minimal at best and production volume growth has moderated on account of higher base volumes and flattening cropping area.

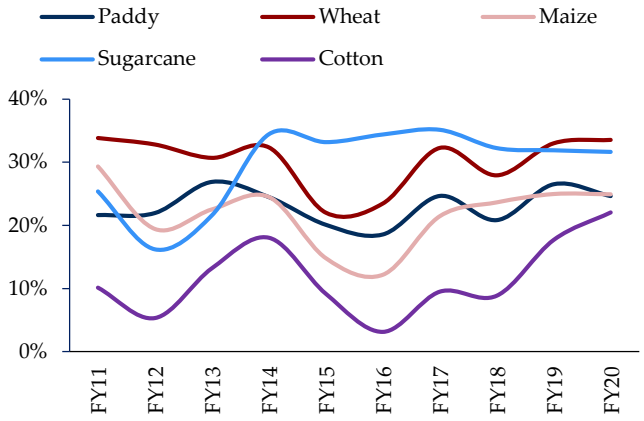
While gross revenue for farmers grew at a reasonable level from FY00 to FY15, it has evidently been constrained ever since. The last piece of the puzzle to explore then becomes the direct costs attributable to farming. If the costs have been growing at a slower rate than the gross revenues, the expansion in farming margins will lead to an exponentially higher rate of net income growth for farmers.

3. Net income generated from crops

We have analysed the unit economics of producing one quintal of each major crop. Since 82% of India's sugarcane production value is concentrated in three states, we have not considered it in the preceding sections of the report due to its disproportionate geographical contribution. However, since it has the highest net income margin of all the major crops considered, it is an important profitability benchmark. Therefore, it has been included in the analysis of this current section.

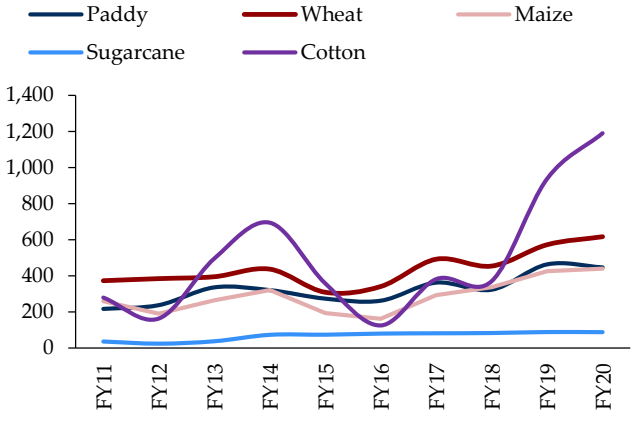
In the following calculations, the gross income used is the MSP, while the costs attributable to farming used here are those calculated by the 'Directorate of Economics and Statistics'. The key heads used for the calculation of production costs are expenses towards labour, hired cattle, machinery, seed, insecticides, pesticides, fertilizer, rent, interest on working capital, depreciation and irrigation, etc.

Exhibit 38: Net income margin of major crops



Source: CMIE, DES, HSIE Research

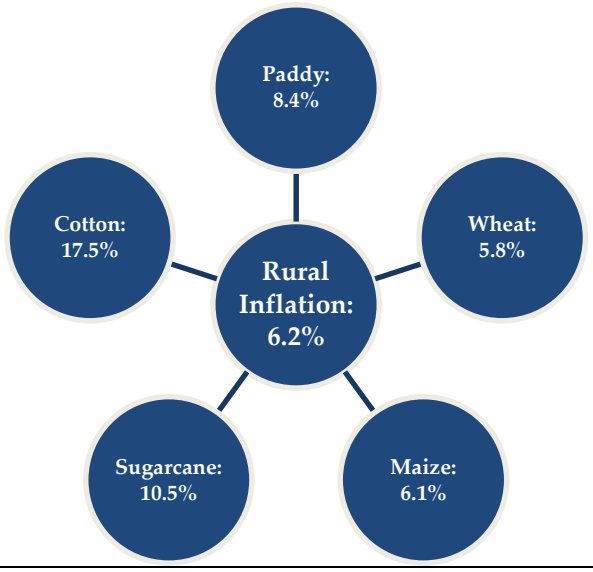
Exhibit 39: Net income (INR) per quintal



Source: CMIE, DES, HSIE Research

We infer from exhibit 38 that barring cotton, net income margins for the other major crops have been constant at best. The primary cause for this could be lower farming efficiency as a result of an unideal degree of automation in farming apart from the oversupply of a crop in a particular geography, thereby putting pressure on selling prices. The resultant net income growth per quintal trends can be seen in exhibit 39. Cotton clearly stands out in both the charts above. We have already established that cotton had a relatively higher MSP growth rate from FY08-FY14, growing at a CAGR of 12.3% during the period. It saw another big jump in prices in FY19 when the MSPs were increased again by ~27%. A steady cost of production meant a disproportionately high increase in the net income of cotton farmers.

Exhibit 40: CAGR of net income from FY11 to FY20 for major crops



Source: CMIE, DES, HSIE Research

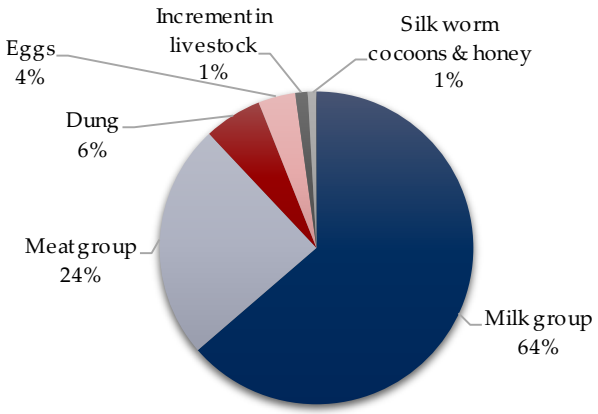
As seen in exhibit 40, the growth in the increase of net income of major crops in India has been a mixed bag. Sugarcane and cotton have been standout performers as a direct result of the increase in cotton MSP and sugarcane fair & remunerative price (FRP). However, these two crops only account for ~8-9% of India's total agricultural production value, thereby limiting the benefits to farmers specializing in them. Wheat and maize have eroded the real earnings of farmers, while paddy has provided only marginal benefits to real farmer income. **It is imperative to note that at the income bracket of most farmers, a high increase in real growth is required to meaningfully increase their absolute discretionary expenditure.**

Key findings:

- The MSPs invariably act as the upper limit of crop prices and have grown at tepid rates, barring a few crops.
- Production volumes for key crops have been muted and unpredictable, largely due to uncontrollable factors such as monsoon quality, stagnant cropped area and limited yield improvement. Production value has largely grown, led by pricing in the past (FY08-FY14), which has moderated post-FY14.
- Farming margins have remained largely flat, as automation levels on farms leave a lot to be desired. Costs of production have grown at similar rates as the selling price of crops. The flat margins in turn are unable to aid the farmers' net income growth.

Livestock

Exhibit 41: Livestock output in FY22: INR 15.6 trn (in nominal terms)



Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

- Milk and meat groups are the dominant contributors in this segment, accounting for 88% of the overall segment output.
- The table below also corroborates the fact that milk and meat have been large real contributors to the sector's growth as they have grown remarkably in the study period of FY12-FY22.

Exhibit 42: CAGR of livestock segments from FY12 to FY22

	Nominal CAGR	Real CAGR	% Contribution (FY22)
Milk group	11.7%	5.5%	63.7%
Meat group	14.7%	7.3%	24.4%
Dung	11.1%	0.9%	6.0%
Eggs	13.7%	6.2%	3.8%
Increment in livestock	7.5%	0.9%	1.3%
Silk worm & honey	12.0%	4.4%	0.9%
Wool & hair	1.9%	-2.3%	0.0%
Overall livestock	**12.4%**	**5.6%**	**100%**

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

- The following tables highlight the top five states by production value for milk and meat group.

Exhibit 43: Top 5 milk producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Rajasthan	15.0%	9.5%
Uttar Pradesh	14.9%	3.7%
Madhya Pradesh	9.1%	9.2%
Gujarat	7.2%	5.0%
Andhra Pradesh	7.2%	6.3%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

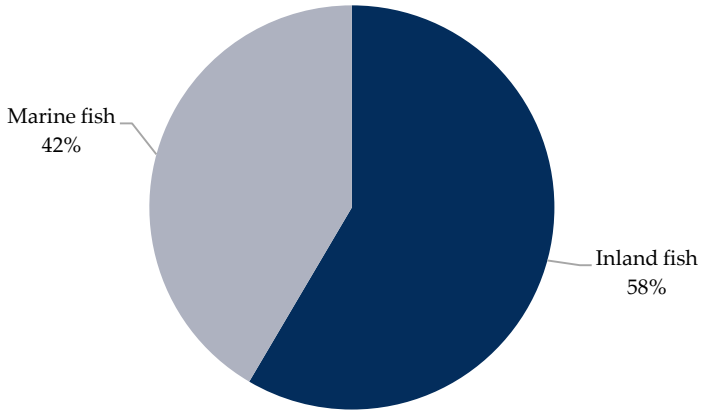
Exhibit 44: Top 5 meat producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Tamil Nadu	19.6%	14.7%
Andhra Pradesh	14.4%	9.5%
Telangana	13.3%	9.5%
West Bengal	9.4%	5.1%
Maharashtra	5.7%	7.0%

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

Fisheries & aquaculture

Exhibit 45: Fishing & aquaculture output in FY22: INR 3.4 trn (in nominal terms)



Source: Agriculture Census, MoSPI, HSIE Research

- The fishing & aquaculture segment has a very small contribution to overall agriculture & allied services sector production value but it has been growing at such a rapid pace over the last decade that its presence can't be ignored. If this momentum continues, this sub-sector could gain critical mass in the years to come and start impacting the rural economy significantly.

Exhibit 46: CAGR of aquaculture segments from FY12 to FY22

	Nominal CAGR	Real CAGR	% Contribution (FY22)
Inland fish	15.7%	6.8%	58.5%
Marine fish	15.3%	9.6%	41.5%
Overall fishing & aquaculture	15.5%	8.1%	

Source: Agriculture Census, MoSPI, HSIE Research

- Inland fish and marine fish contribute 58% and 42% of the overall segment output respectively. Among the two, marine fish production value has registered an impressive 9.6% real CAGR in the period FY12 to FY22. Inland fish has also reported a healthy real CAGR of 6.8% in the same period. The following tables highlight the top five states by production value for inland and marine fish

Exhibit 47: Top 5 inland fish producing states by value

State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Andhra Pradesh	23.6%	14.1%
West Bengal	23.1%	2.5%
Assam	10.0%	5.3%
Bihar	7.1%	7.9%
Uttar Pradesh	6.6%	6.3%

Source: Agriculture Census, MoSPI, HSIE Research

Exhibit 48: Top 5 marine fish producing states by value

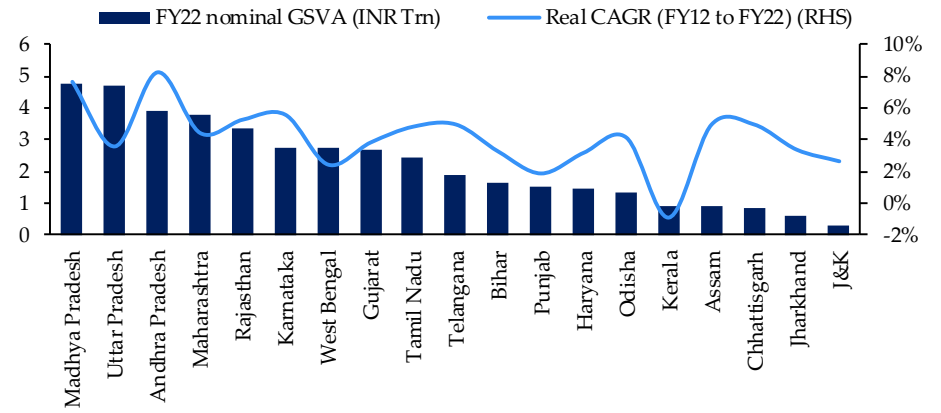
State	Contribution to pan-India total production in FY21	Real production value CAGR (FY12-21)
Andhra Pradesh	46.3%	20.3%
Tamil Nadu	12.0%	3.5%
Gujarat	9.4%	0.9%
Kerala	8.1%	-2.6%
West Bengal	7.1%	2.1%

Source: Agriculture Census, MoSPI, HSIE Research

Geographical analysis of the agricultural sector

With the help of the below chart & tables, we will further examine the sector with a geographical perspective to identify states which are reflecting palpable agricultural growth. In our opinion, these geographies will witness a noticeable rise in per capita rural income and thereby consumption growth.

Exhibit 49: State-wise nominal agricultural GSVA with real growth CAGR



Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

- Leading states with respect to agricultural production are Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Maharashtra, and Rajasthan but respectable growth is shown only by Madhya Pradesh and Andhra Pradesh.

Exhibit 50: Geographical Distribution of agricultural output

	Milk	Paddy	Meat group	Industrial wood	Wheat	Inland fish	Marine fish	Straw	Sugarcane	Cotton	Potato	Mango	Maize	Onion	Soyabean
FY21 Production value (INR trn)	9.2	3.5	3.4	2.4	2.2	1.8	1.2	1.0	1.0	0.9	0.9	0.9	0.5	0.6	0.5
Contribution to overall agricultural output	20%	8%	7%	5%	5%	4%	3%	2%	2%	2%	2%	2%	1%	1%	1%
Andhra Pradesh	7%	6%	14%	3%	0%	24%	46%	2%	1%	4%	0%	22%	5%	5%	0%
Assam	1%	4%	1%	2%	0%	10%	0%	1%	0%	0%	2%	0%	1%	0%	0%
Bihar	5%	5%	4%	2%	6%	7%	0%	6%	2%	0%	6%	14%	8%	1%	0%
Chhattisgarh	1%	6%	1%	6%	0%	6%	0%	4%	0%	0%	2%	3%	1%	2%	0%
Gujarat	7%	2%	2%	7%	3%	0%	9%	7%	5%	19%	11%	6%	2%	6%	2%
Haryana	6%	4%	3%	2%	11%	1%	0%	4%	3%	5%	1%	1%	0%	0%	0%
Jharkhand	1%	2%	1%	2%	0%	2%	0%	2%	0%	0%	2%	3%	2%	1%	0%
Karnataka	4%	3%	5%	4%	0%	1%	3%	4%	14%	7%	1%	4%	14%	14%	3%
Kerala	1%	1%	4%	6%	0%	2%	8%	0%	0%	0%	0%	2%	0%	0%	0%
Madhya Pradesh	9%	4%	2%	6%	18%	2%	0%	10%	3%	4%	11%	4%	14%	22%	35%
Maharashtra	7%	3%	6%	16%	2%	1%	5%	8%	21%	28%	1%	5%	9%	34%	48%
Odisha	1%	7%	4%	5%	0%	5%	5%	2%	0%	2%	0%	4%	1%	2%	0%
Punjab	6%	11%	2%	5%	16%	1%	0%	3%	2%	3%	2%	1%	1%	1%	0%
Rajasthan	15%	1%	3%	6%	9%	1%	0%	17%	0%	9%	0%	0%	6%	4%	9%
Tamil Nadu	3%	5%	20%	3%	0%	1%	12%	2%	3%	1%	0%	2%	11%	2%	0%
Telangana	4%	8%	13%	2%	0%	3%	0%	2%	0%	17%	0%	6%	5%	1%	2%
Uttar Pradesh	15%	12%	4%	9%	32%	7%	0%	18%	44%	0%	31%	16%	5%	2%	0%
West Bengal	3%	12%	9%	2%	1%	23%	7%	4%	0%	0%	28%	7%	8%	4%	0%
Others	3%	4%	3%	13%	2%	3%	3%	3%	1%	0%	3%	2%	6%	1%	1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100.0%**

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

- The table above highlights that the production of various agricultural articles isn't diversified geographically. These are concentrated in specific states acting as drivers of rural economies of those specific locations.

- The 15 agricultural products included in exhibit 50 cover 66% of the overall agri production of India
- It can be observed that Andhra Pradesh is a leading producer of milk, meat, paddy, fish and mango. AP's strong agriculture performance can be attributed to MSP for aquaculture products, subsidies for power, and government support for the setting up of integrated aquaculture labs. Gujarat has milk, cotton and potato as its key products.
- While Karnataka dominates in the production of maize, onion and sugarcane, Madhya Pradesh steals the show with its proven supremacy in the production of several articles, namely milk, wheat, straw, potato, maize, onion and soybean. Some of the key reasons behind MP's stellar performance are government subsidies on purchase of agricultural equipment and regular provision of bonus over MSP for wheat production.
- Maharashtra being an agriculture stalwart leads the table for the production of industrial wood, sugarcane, cotton, maize, onion and soybean.
- Similar to MP and Maharashtra, Uttar Pradesh also has a diversified agri-portfolio including milk, paddy, wheat, sugarcane, potato and mango. West Bengal specializes in the products such as fish, paddy and potatoes.
- Surprisingly, Punjab's agricultural performance has been tepid at best. Double mono-cropping of wheat and rice has resulted in increased grain harvest in last 4 decades but resulted in water use beyond its sustainability due to increased demand for irrigation. Furthermore, excessive use of fertilisers and pesticides has added to land fertility degradation. The soil of Punjab has witnessed ever increasing micronutrients deficiency. All these factors have led to an adverse agricultural condition in the state.
- We can summarise that the top 10 states are responsible for a substantial portion of the agricultural production in India. Hence, a rising agricultural economy will boost the consumption capacity of the rural population of these specific states and will have an insignificant impact on other states.

Exhibit 51: Crops and geographies witnessing growth (product-wise real CAGR for various states in the period FY12-FY21)

	Milk	Paddy	Meat group	Industrial wood	Wheat	Inland fish	Marine fish	Straw	Sugarcane	Cotton	Potato	Mango	Maize	Onion	Soyabean
Product wise real CAGR	6%	2%	8%	8%	2%	7%	9%	0%	2%	0%	4%	2%	4%	7%	0%
Andhra Pradesh	6%	0%	10%	10%	NA	14%	20%	-1%	-14%	7%	NA	9%	0%	2%	NA
Assam	2%	2%	3%	0%	NA	5%	NA	-1%	NA	NA	1%	NA	27%	17%	NA
Bihar	6%	-1%	8%	7%	3%	8%	NA	0%	0%	NA	3%	2%	3%	3%	NA
Chhattisgarh	5%	1%	5%	12%	NA	10%	NA	0%	45%	NA	28%	6%	8%	34%	-6%
Gujarat	5%	2%	3%	4%	-2%	-2%	1%	0%	1%	-6%	6%	0%	-2%	1%	22%
Haryana	6%	0%	7%	2%	0%	7%	NA	0%	3%	-4%	NA	4%	NA	NA	NA
Jharkhand	4%	-1%	3%	11%	7%	11%	NA	1%	NA	NA	11%	-1%	8%	34%	NA
Karnataka	8%	1%	10%	13%	NA	2%	0%	0%	1%	7%	-2%	-1%	3%	15%	9%
Kerala	-1%	1%	2%	6%	NA	8%	-3%	NA	NA	NA	NA	3%	NA	NA	NA
Madhya Pradesh	9%	7%	12%	7%	5%	14%	NA	2%	8%	-4%	8%	18%	13%	9%	-5%
Maharashtra	5%	1%	7%	14%	5%	-2%	0%	-2%	3%	4%	4%	-1%	4%	7%	5%
Odisha	4%	5%	2%	15%	NA	10%	12%	0%	NA	10%	NA	2%	1%	-2%	NA
Punjab	4%	3%	4%	1%	0%	6%	NA	0%	4%	-9%	4%	3%	-3%	3%	NA
Rajasthan	10%	11%	8%	6%	2%	8%	NA	0%	NA	7%	NA	0%	3%	10%	-3%
Tamil Nadu	3%	-1%	15%	19%	NA	-2%	3%	3%	-10%	-5%	NA	-4%	5%	-1%	NA
Telangana	5%	8%	10%	10%	NA	6%	NA	5%	-9%	4%	NA	-2%	-1%	-8%	2%
Uttar Pradesh	4%	1%	-2%	6%	2%	6%	NA	0%	3%	NA	3%	0%	4%	3%	NA
West Bengal	3%	1%	5%	5%	-4%	2%	2%	1%	NA	NA	5%	3%	24%	10%	NA

Source: DES of various states, Agriculture Census, MoSPI, HSIE Research

- The table above shows the growth rates of production of various articles in a particular state during the period FY12 to FY21.
- While the overall crop production segment has grown at a measly 2% real CAGR between FY12 and FY21 painting a grim picture of the sector, there are various crops and geographical pockets which have grown very rapidly in the same period offering vibes of optimism. For example, milk, meat group, industrial wood, inland fish, marine fish and onion have grown at a healthy real rate between FY12 and FY21.

  Based on our state-wise analysis of the agriculture sector, we have summarized our findings in exhibit 51. The table highlights the real agri output CAGR for each state and the segments contributing to the growth. **For example, fishing and aquaculture accounted for 53% of the agri output growth in Andhra Pradesh from FY12-21.** We have also highlighted the bright spots in each state that have contributed to the corresponding growth.

Exhibit 52: State-wise contributors to total agricultural output

State	Contribution to state's real Agri output CAGR (FY12-21)				Real Agri Output CAGR (FY12-21)	Bright Spots			
	Crops	Livestock	Forestry and logging	Fishing and aquaculture		Crops	Livestock	Forestry and logging	Fishing and aquaculture
Andhra Pradesh	16%	30%	1%	53%	8.2%	Mango	Meat		Inland fish, marine fish
Chhattisgarh	42%	12%	4%	43%	4.6%			Industrial woods	Inland fish
Karnataka	56%	38%	6%	0%	5.6%	Onion			
Madhya Pradesh	69%	26%	3%	2%	7.6%	Wheat, Potato, Maize, Onion	Milk		
Maharashtra	41%	34%	25%	0%	4.4%	Onion		Industrial woods	
Tamil Nadu	-6%	95%	7%	4%	4.8%	Meat			
Telangana	27%	68%	1%	4%	4.9%	Cotton	Meat		
West Bengal	40%	40%	4%	17%	2.4%	Maize			
Punjab	29%	64%	4%	3%	1.9%				
Kerala	-463%	114%	274%	-24%	-0.9%			Industrial woods	
Rajasthan	17%	77%	5%	1%	5.2%	Cotton	Milk		
UP	61%	27%	6%	6%	3.6%			Industrial woods	

- Andhra Pradesh has witnessed superlative double-digit growth in the production of inland fish, marine fish, meat and mango. For all these products, the state's contribution towards the country's production has been substantial.
- Chhattisgarh contributes 6% of industrial woods and inland fish each towards the country's overall production. These segments have grown at a remarkable 12% and 10% real rate respectively in the analysis period.
- Haryana accounts for 11% of the country's wheat production but has reported no growth in the considered period; however, it has fared well in milk production where it has grown at ~6% real CAGR. Similarly, Punjab which is a major producer of paddy and wheat with 11% and 16% share respectively in the country's production has shown only muted growth at both these fronts. So, conventional agri stronghold states like Punjab and Haryana have not been able to maintain their performance.

- Karnataka has grown onion production at 15% real CAGR where its share in the country's production also is meaningful at 14%. Madhya Pradesh is one of the leaders in the production value of milk, wheat, potato, maize and onion and it has been reporting impressive growth rates as well.
- Maharashtra, which is a leading producer of industrial wood, sugarcane, cotton, maize, onion and soybean, has been able to show respectable growth only in the cases of industrial wood and onion. On the other hand, Tamil Nadu and Telangana being major producers of meat products have been able to report strong growth in the segment as well.
- Additionally, Uttar Pradesh, which is a leading producer of many crops such as milk, paddy, wheat, sugarcane and potato, hasn't been able to post any meaningful growth which could deserve mention.

Key conclusion: We have analysed the "agriculture & allied services" sector categorized by the nature of the final produce. We highlight that the largest segment "crop production" isn't growing at a desired pace due to low profitability and muted MSP growth of various crops. However, the "livestock" segment is growing at an encouraging pace, promising to become a reliable driver of future growth of the rural economy. Apart from these two, a third segment "fishing & aquaculture ", which is relatively smaller as of now is also growing rapidly, driven by supporting policies of specific states. Hence, we can conclude that in spite of prevailing headwinds, "agriculture & allied sector" is not worth overlooking as it contains several bright spots which enthuse optimism for future growth and employment generation. Additionally, our geography wise analysis suggests that Andhra Pradesh and Madhya Pradesh are the key performing states.

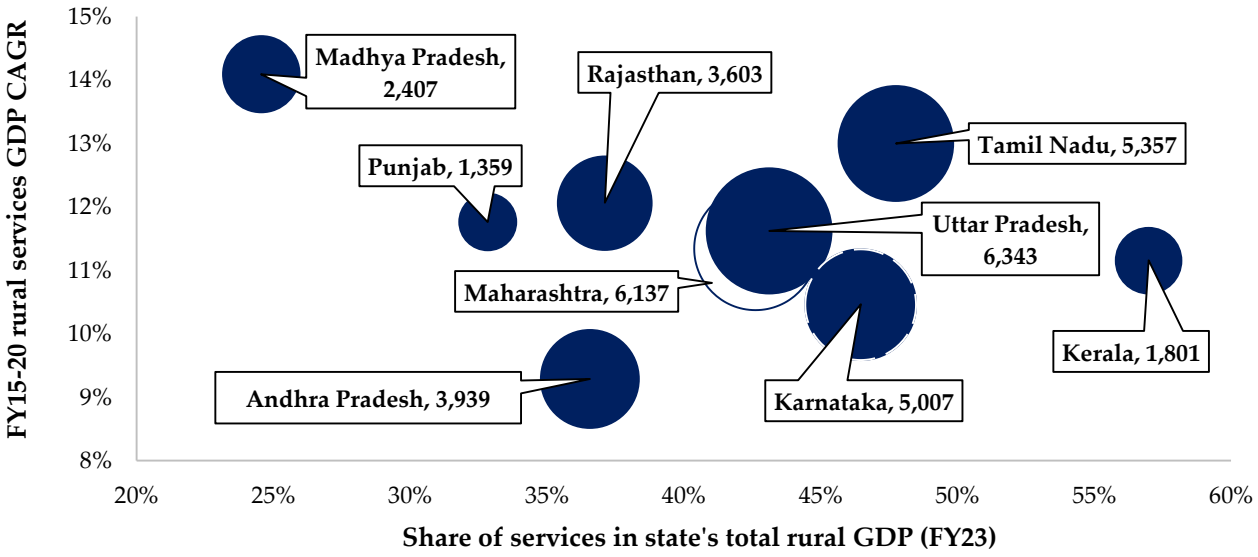
The services sector in rural India

Although it constitutes ~34% of rural India's economy, the services sector is often overlooked during discussions about rural India. The unorganised nature of most rural services makes the segment's analysis a cumbersome task. Nevertheless, ignoring such a large segment of rural India's economic activity leads to an incomplete understanding of the rural economy and an incomprehensive approach to evaluating rural recovery. In this section of the report, we will be examining the top 9 states by rural services that account for ~84% of total rural services GDP. We have used a bottom-up approach by analysing the rural districts in all these states to quantify the below-listed services segments of the respective regions and identify the largest segment in each state. The segments are:

- Trade, hotels, & restaurants
- Transport, storage, & communication
- Financial services
- Real estate & professional services
- Public administration
- Other services

Top contributing states to rural services GDP

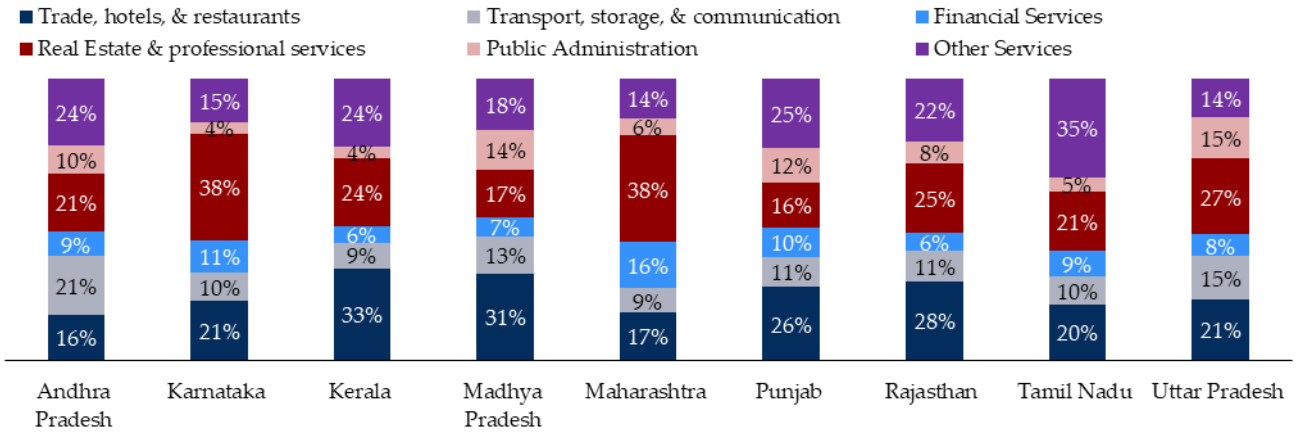
Exhibit 53: Snapshot of rural services' GDP in key states



Note: Size of the bubble represents absolute rural services GDP for each state for the year FY23 in INR bn
Source: DES documents of various states, HSIE Research

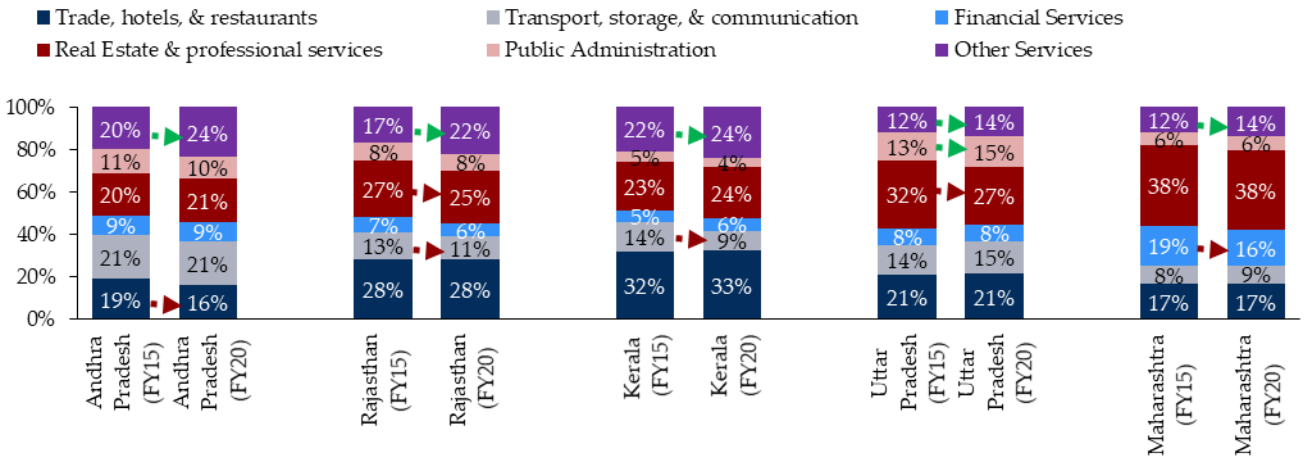
- The graph above helps us understand the contribution of the rural service sector for each state under consideration. It is intriguing to note that our country, whose rural economy is known to be heavily dependent on agriculture, has such a large contribution (>30% for 8 out of 9 states) coming from the services sector. We hypothesise that led by an entrepreneurial younger population and alternative occupational avenues, the service sector in rural India will continue to grow structurally. The obvious caveat to our thesis being hearty support from government policies, private sector participation, and credit availability.

Exhibit 54: Rural services segmentation by state (FY20)



Source: DES documents of various states, HSIE Research

Exhibit 55: Rural services' mix has been gradually changing in some key states



Source: DES documents of various states, HSIE Research

- From the charts above, it is evident that the two segments "trade, hotels & restaurants" and "real estate & professional services" are predominant drivers of the service sector for most of the states under study. "Financial services" happens to be significant for Maharashtra.
- Additionally, we observe that the services segment mix has been changing for a few key states. For example, the contribution from "trade, hotels & restaurants" for Andhra Pradesh has reduced by 300 bps between FY15 and FY20. Additionally, there is a sharp decline in rural real estate contribution for Uttar Pradesh which has been partially compensated by public administration services.

Service sector growth drivers

To understand the rural services sector in more detail, we will now look at the individual drivers that help propel each service segment. It will help us assess the pickup of the services sector in each state. The drivers that we will be gauging for each service segment and the respective rationales are as follows:

- **Trade, hotels, & restaurants:**
  - Credit conditions and offtake—a key metric to evaluate capital availability for business ventures
  - Rural employment in hotels and restaurants

- Specific food and beverage inflation indicators—raw materials for restaurants
- Rural employment in rural wholesale and retail ventures

- **Transport, storage, and communication:**
  - State-wise truck freight rates
  - Railway freight volumes
- **Financial services:**
  - Credit conditions and offtake—activity in banking services to bode well for employees in the field
- **Real estate & professional services:**
  - Credit conditions and offtake—the key metric to evaluate capital availability for real estate purchase
- **Other services:**
  - Credit conditions and offtake—the key metric to evaluate capital availability for business ventures
  - Rural employment in travel and tourism
  - State-specific rural inflation

We have examined various service sector drivers in the following section.

1. Credit conditions and offtake

Credit conditions and offtake is the most important metric to assess services offtake, as it gives an insight into capital availability and appetite for small business ventures. Considering that it is a key driver for 4 out of the 6 service segments, it is the metric to track most acutely.

Exhibit 56: Rural and Semi-Urban credit growth (YoY %)—a mixed bag across states

Quarter	Andhra Pradesh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh
Q1 FY20	16.0%	5.2%	12.4%	11.5%	8.5%	3.3%	14.6%	15.8%	14.2%
Q2 FY20	14.6%	6.4%	13.3%	12.3%	7.7%	8.0%	14.0%	15.8%	13.6%
Q3 FY20	13.0%	7.5%	10.8%	12.2%	9.0%	5.1%	12.3%	13.0%	10.6%
Q4 FY20	9.4%	8.4%	8.2%	10.8%	4.1%	4.1%	10.1%	11.1%	7.7%
Q1 FY21	10.9%	10.2%	5.8%	8.6%	5.0%	3.6%	8.8%	11.0%	7.1%
Q2 FY21	13.3%	11.7%	6.4%	9.1%	7.3%	2.8%	10.9%	13.6%	8.2%
Q3 FY21	15.4%	12.9%	6.8%	8.8%	8.3%	4.9%	11.7%	16.8%	9.2%
Q4 FY21	17.8%	13.8%	9.5%	12.9%	15.5%	8.7%	13.3%	20.5%	11.1%
Q1 FY22	16.3%	10.8%	8.8%	19.2%	10.6%	8.1%	11.5%	18.3%	9.8%
Q2 FY22	15.9%	9.9%	7.1%	16.8%	11.4%	5.4%	10.4%	14.3%	9.6%
Q3 FY22	14.4%	7.5%	6.2%	19.3%	9.2%	7.2%	10.7%	11.6%	10.4%
Q4 FY22	14.6%	9.2%	6.9%	11.5%	10.5%	5.4%	12.7%	10.3%	10.5%
Q1 FY23	17.5%	12.8%	11.3%	10.1%	14.2%	1.7%	16.6%	13.2%	12.6%
Q2 FY23	18.6%	14.6%	14.3%	9.7%	14.3%	5.7%	17.1%	15.1%	13.4%
Q3 FY23	19.4%	17.0%	14.5%	10.5%	15.1%	3.4%	16.2%	15.9%	11.7%

Note: We haven't included Q4FY23 figures due to reclassification of reporting bank offices in rural and semi-urban regions. The number of reporting offices have declined ~20% from Q3FY23 to Q4FY23. This makes quarterly comparison for the sample population unsound.
Source: DES documents of various states, CMIE, MOSPI, HSIE Research

- In the table above, green or red shading indicates credit growth if the mentioned period is above or below the state's long-term average respectively.

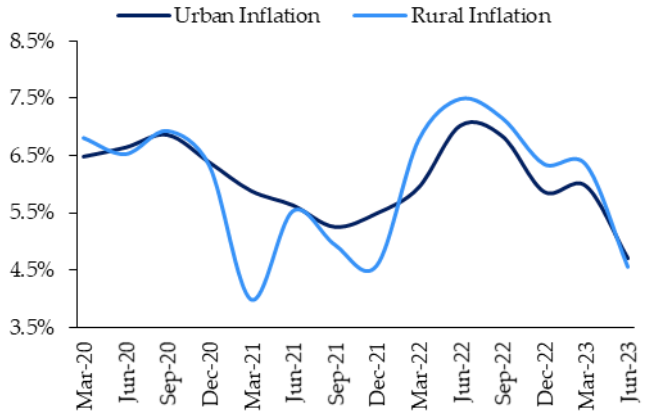
- We can notice that the states, namely Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu, Rajasthan and Uttar Pradesh, have reported credit growth in the recent quarters higher than the historical long-term average. On the other hand, Punjab and Madhya Pradesh have grown slower than their long-term average.

2. Rural inflation

A deterrent to sole proprietorship ventures, high inflation can slow down the recovery of various service segments in rural India. Key inflation rates and metrics we are monitoring to gauge the health of rural services are:

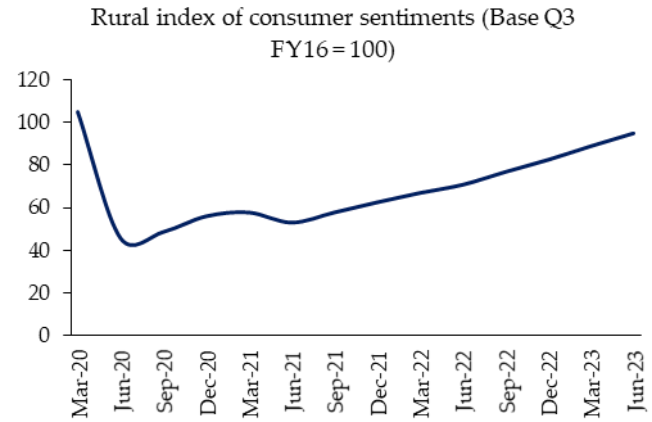
- Headline rural inflation
- Rural index of consumer sentiments
- Rural inflation for fruits, vegetables, pulses, spices and fuel; these are raw materials for restaurants and hotels and other sole proprietary ventures.

Exhibit 57: Inflationary pressures easing; parity between urban and rural households reached



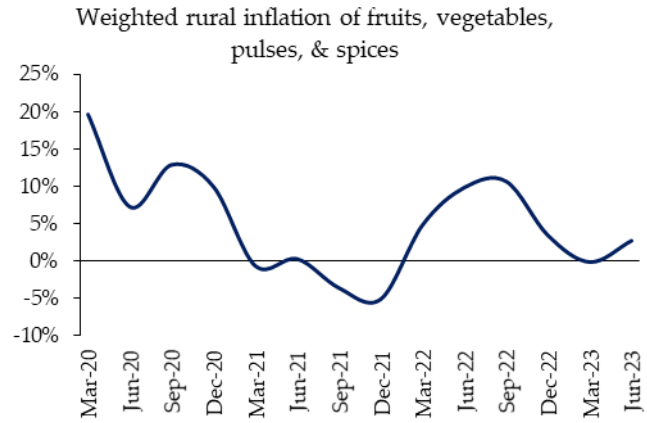
Source: CMIE, HSIE Research

Exhibit 58: Rural households' consumer sentiments gradually improving



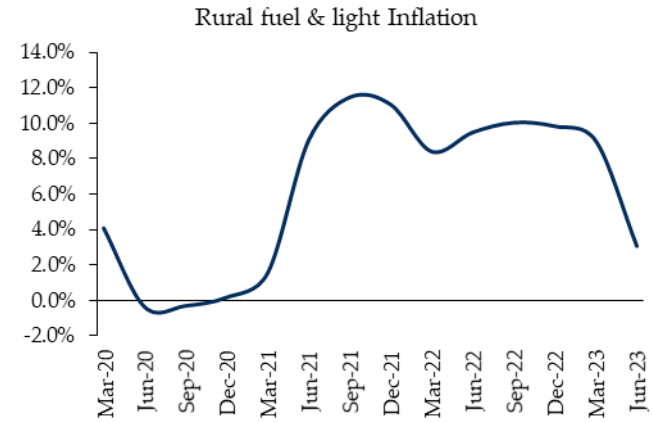
Source: CPHS, CMIE, HSIE Research

Exhibit 59: Low inflation in F&B inputs a positive for rural restaurant and hotels



Source: MOSPI, HSIE Research

Exhibit 60: Respite in fuel and light inflation to help boost sole proprietorship and industrial ventures



Source: MOSPI, HSIE Research

Exhibit 61: Rural inflation across states easing to comfortable levels on account of favourable base effect and lower commodity prices

Quarter	Andhra Pradesh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Tamil Nadu	UP
Mar-20	5.0%	5.3%	6.5%	7.9%	6.0%	7.5%	7.3%	7.4%	8.8%
Jun-20	6.9%	5.6%	6.3%	7.9%	6.0%	6.4%	6.0%	7.2%	8.1%
Sep-20	8.8%	5.9%	6.1%	8.0%	6.0%	5.3%	4.7%	7.0%	7.3%
Dec-20	9.1%	5.3%	5.1%	6.1%	5.5%	4.2%	3.3%	6.1%	5.9%
Mar-21	8.7%	4.5%	4.2%	4.9%	4.8%	2.5%	1.6%	5.5%	2.0%
Jun-21	5.4%	6.5%	5.3%	8.1%	7.0%	6.4%	4.8%	6.3%	6.6%
Sep-21	6.2%	5.6%	3.6%	6.1%	6.2%	5.7%	3.9%	5.7%	4.9%
Dec-21	4.9%	4.9%	3.2%	5.8%	6.1%	4.2%	4.4%	5.2%	5.2%
Mar-22	5.2%	5.1%	3.9%	7.8%	7.3%	4.8%	6.7%	4.9%	8.2%
Jun-22	8.3%	5.7%	4.8%	8.7%	8.5%	6.9%	8.1%	5.6%	7.8%
Sep-22	6.9%	4.7%	5.8%	8.3%	7.7%	5.7%	7.2%	5.7%	7.6%
Dec-22	7.2%	4.9%	6.1%	7.3%	6.5%	5.7%	6.7%	6.5%	6.8%
Mar-23	8.0%	5.8%	6.4%	7.0%	6.5%	6.4%	7.0%	6.9%	7.0%
Jun-23	4.4%	3.9%	5.1%	2.0%	3.7%	4.0%	5.1%	5.6%	5.3%

Source: DES documents of various states, CMIE, MOSPI, HSIE Research

- For most states, rural inflation moderated to comfortable levels in Q1FY24, which should positively impact the recovery of the services segment going forward.

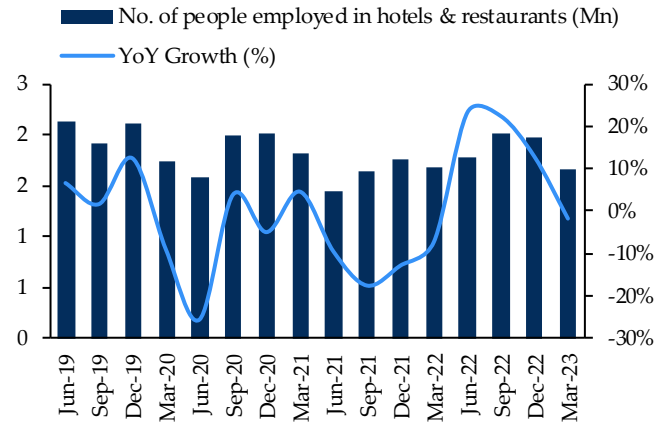
3. Rural employment in key services

Based on the rural services segmentation, we have identified key services that are significant across several states. The rural employment trends in these services have been analysed to gauge their individual performance. The services we have analysed are:

- Wholesale and retail trading
- Hotels & restaurants
- Tourism
- Personal non-professional services

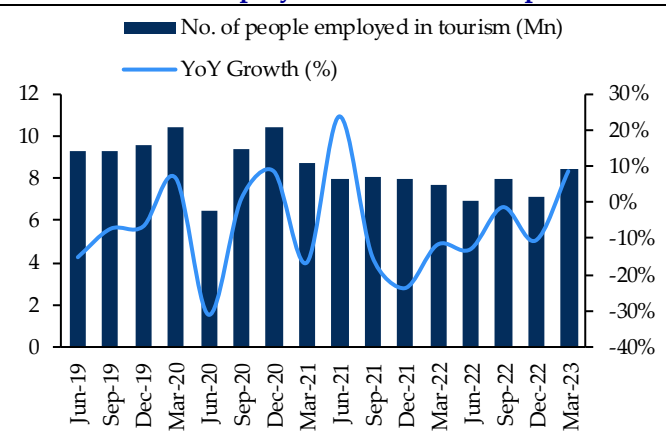
Exhibit 62: Rural employment in trading has grown since the COVID-19 pandemic but same in "hotels & restaurants" yet to recover

Source: CMIE, HSIE Research

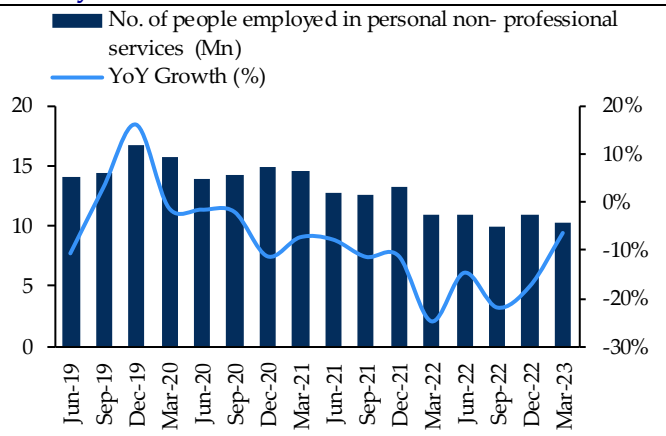


Source: CMIE, HSIE Research

Exhibit 63: Rural employment in tourism & personal services likely to have bottomed out



Source: CMIE, HSIE Research



Source: CMIE, HSIE Research

- Trends of rural employment in various sectors from the charts above indicate that employment in "tourism" and "personal non-professional services" has declined after the pandemic and has not yet fully recovered. Having mentioned this, it is worth pointing out that recent YoY growth trends indicate a possible bottoming out and expected growth in coming quarters.

- The number of people employed in "wholesale & retail trading" has grown since the gradual end of the pandemic. This can be attributed to reverse migration which took place from cities to villages post the COVID-19 outbreak.

- The hotels & restaurants sector hasn't witnessed any significant growth in employment as the sector was severely impacted by the pandemic and various businesses were shut permanently. The easing rural inflation can help bolster this service segment going forward.

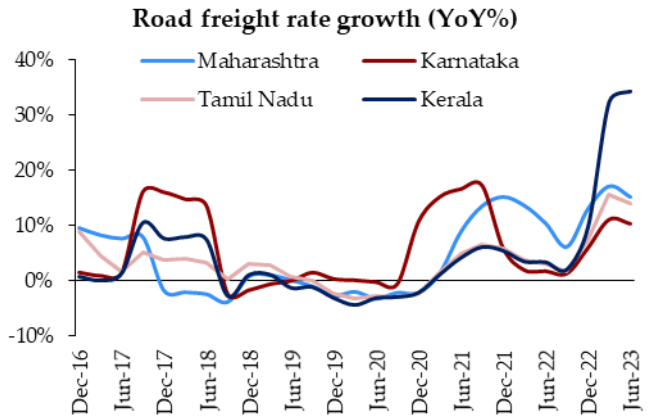
4. Transport freight volumes and rates

- The transport and storage segment accounts for ~10-15% of rural services across most states. Freight rates and volume can help determine the demand for goods transported. As highlighted in the manufacturing section of the report later, ~63% of India's industrial gross capital is capitalised in rural India. The high industrial activity works as a strong driver for the growth of transportation.

- A steady pickup in freight volumes is likely to only happen if there is sustained capacity utilization from these rural factories. Higher rates and volume indicate a pickup in economic activity and in turn higher earnings for transport workers in rural India.

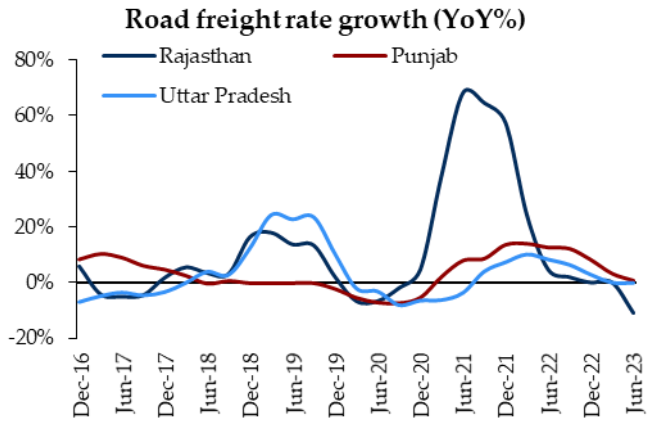
- We have focused on rail and road freight statistics since most goods being transported are done through these mediums.

Exhibit 64: Rising freight rates a positive for transport services in some key states



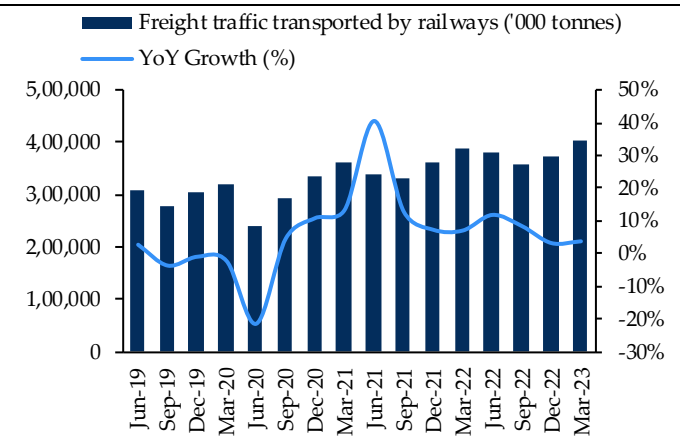
Source: CMIE, HSIE Research

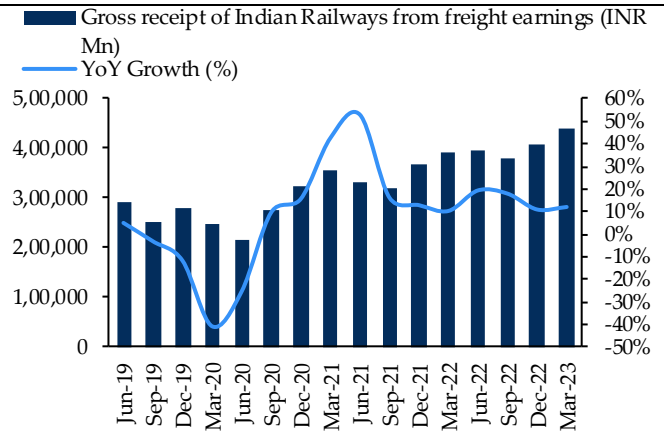
Exhibit 65: Tepid freight rates a negative for transport services in the following states



Source: CMIE, HSIE Research

Exhibit 66: Steady improvement in freight volume and value transported by rail bodes well for workers in transport services





Source: CMIE, HSIE Research

- It is evident from above charts that truck freight prices have risen in Maharashtra, Karnataka, Tamil Nadu and Kerala, indicating industrial pickup in those states, while the same has not been so encouraging in Rajasthan, Punjab and Uttar Pradesh.
- Furthermore, railways which operate across states have shown rising trends in freight traffic transported and gross receipts, reflecting the sound growth in activities, earnings, and employments related to railways transportation. As the country recovered from the pandemic, these growth rates stabilised accordingly as well.

State-wise rural services index

Having analysed various drivers of service sector segments of rural India, we have developed a rural services index for health checks of rural service economies of various states for the previous 16 quarters. **The indices are ranked from 0 to 10, with 0 being the worst possible service sector economic activity and 10 being the best.** The share of various segments of the service sector in each state and the aforementioned sector drivers' data have been used in deriving these index values.

Exhibit 67: Rural services index (scored from 0 to 10)

	Andhra Pradesh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh
Q1 FY20	5.8	2.5	5.0	6.1	5.5	5.1	6.1	6.5	7.1
Q2 FY20	5.3	2.8	5.0	5.7	5.1	6.1	5.4	6.0	6.6
Q3 FY20	3.3	2.7	3.2	3.4	4.5	3.8	3.2	3.7	4.2
Q4 FY20	2.1	3.0	2.4	2.3	3.5	2.9	1.8	2.7	2.4
Q1 FY21	1.4	3.2	0.9	0.9	3.2	2.4	0.9	1.9	1.8
Q2 FY21	3.2	4.5	2.2	2.0	4.4	3.7	3.3	4.0	2.9
Q3 FY21	5.3	6.1	2.9	2.9	4.8	5.0	4.5	5.8	3.8
Q4 FY21	6.6	7.1	4.4	4.7	6.3	7.0	6.2	7.2	5.2
Q1 FY22	7.6	5.5	4.7	6.4	5.9	6.4	5.4	7.3	4.6
Q2 FY22	6.6	5.0	3.8	6.0	5.9	5.2	4.5	5.3	4.8
Q3 FY22	4.9	3.6	3.5	7.0	5.5	6.4	4.4	4.3	5.0
Q4 FY22	4.6	4.1	3.5	4.0	5.5	5.8	4.8	4.1	4.6
Q1 FY23	5.3	5.7	5.4	3.5	6.1	4.3	5.8	5.0	5.6
Q2 FY23	6.0	7.1	6.4	3.6	6.2	6.0	6.3	5.8	5.8
Q3 FY23	6.4	8.0	6.3	3.7	6.6	4.9	5.6	5.7	5.0
Q4FY23	7.0	7.9	6.8	3.8	6.8	4.5	5.7	6.3	4.9

Source: DES documents of various states, CMIE, MOSPI, HSIE Research

Key assumptions and considerations in service index constitution:

- The service sector segmentation is different for each state, hence the segment weights have been used as indicated in exhibit 54.
- Certain drivers for which state-specific data is not available have been given lower weightage in the index calculations.
- While only 16 quarters have been shown in the above table, the scores have been assigned using historical data for the past 30 quarters.
- The reclassification of semi-urban and rural reporting offices has made the Q4FY23 credit data by the RBI unrepresentative of the past sample size used. Based on the qualitative assessment of the system-wide credit growth, we have assigned the Q3FY23 credit offtake scores for each state to Q4FY23 as well.
- Due to the lag in reporting of some data points, Q1FY24 data is currently not available for all metrics. Therefore, the index has been created till Q4FY23 for a more even and analogous comparison.

Observations:

- The rural services index for the states of Andhra Pradesh, Karnataka, Maharashtra and Kerala have improved in FY23 post a subdued H2FY22. Their performances have noticeably recovered relative to pre-pandemic levels.
- Performances of service sectors of rural Madhya Pradesh, Punjab and Uttar Pradesh have not recovered as the country entered the post-pandemic recovery phase.

Overall rural service sector performance

Exhibit 68 highlights the key states' rural services performance. It identifies the key specific sectors doing well in each state and the individual drivers behind the performance. The performance has been highlighted as green for positive and red for negative. The numbers in the table cells represent the ranking of each service segment's contribution to the state's total rural services. For example, 'trade, hotels, & restaurants' for Andhra Pradesh is the third largest contributor to rural services, hence it has a rank of 3.

Exhibit 68: State-wise rural service sector performance

State	Trade, hotels, & restaurants	Transport, storage & communication	Financial services	Real estate & professional services	Public administration	Overall rural services
Andhra Pradesh	3	1	5	2	4	Steady improvement
Karnataka	2	4	3	1	5	Strong improvement
Kerala	1	3	4	2	5	Steady improvement
Madhya Pradesh	1	4	5	2	3	Consistently below par
Maharashtra	2	4	3	1	5	Steady improvement
Punjab	1	4	5	2	3	Subsequent quarters of regression
Rajasthan	1	3	5	2	4	Scope for further improvement
Tamil Nadu	2	3	4	1	5	Steady improvement
Uttar Pradesh	2	4	5	1	3	Below par performance

Key conclusion: Accounting for ~32% of rural GVA, the services sector needs to be analysed to gain a comprehensive understanding of the rural economy. Based on our bottom up analysis of rural districts, we have identified the services that contribute to the segment's economic output for each of the aforementioned nine states. Based on the high frequency drivers of each service segment and their contribution to the states' total rural services, we have assessed that the states where there is a buoyant services' performance are Andhra Pradesh, Karnataka, Kerala, Maharashtra, and Tamil Nadu.

The manufacturing sector in rural India

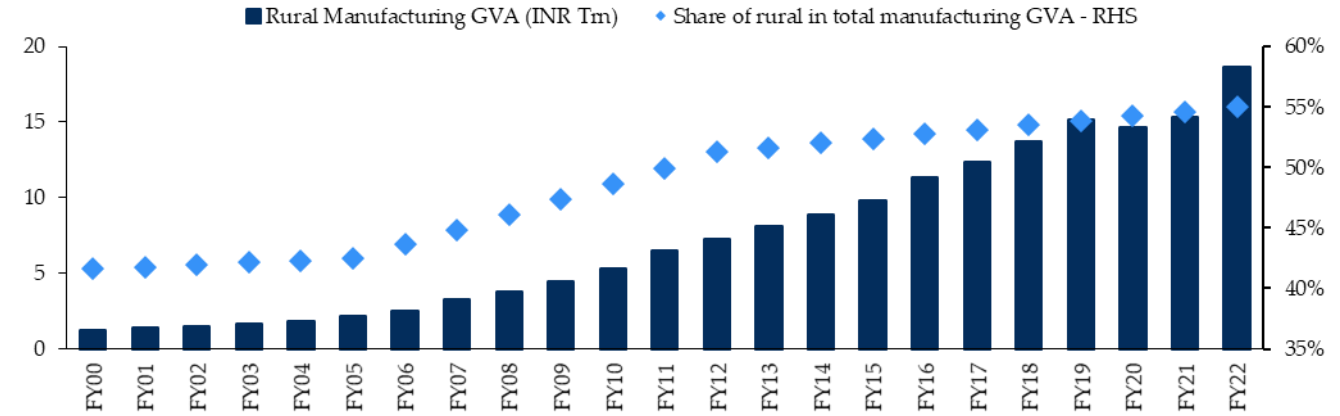
In this section of the report, we endeavor to understand the nature of manufacturing in rural India. We will be primarily concentrating on the following focus areas:

- Time-series assessment of manufacturing in rural India
- The nature of gross fixed capital in urban vs rural India
- State-wise comparison of manufacturing fixed capital in rural parts of the country
- Expected growth in rural manufacturing and its impact on rural employment

The primary source of the data used in this section is the 'Annual Survey of Industries' conducted annually by MoSPI for the financial years FY00 to FY20. We have supplemented this with other data points to carry out our analysis.

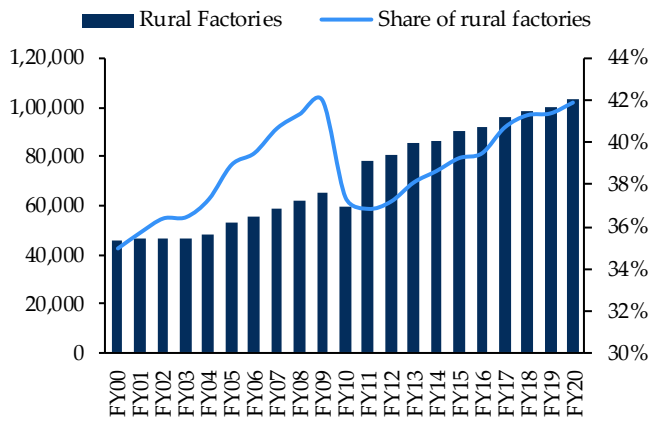
Rural manufacturing – a snapshot

Exhibit 69: Rural India steadily accounting for a larger share of the economy's manufacturing activity



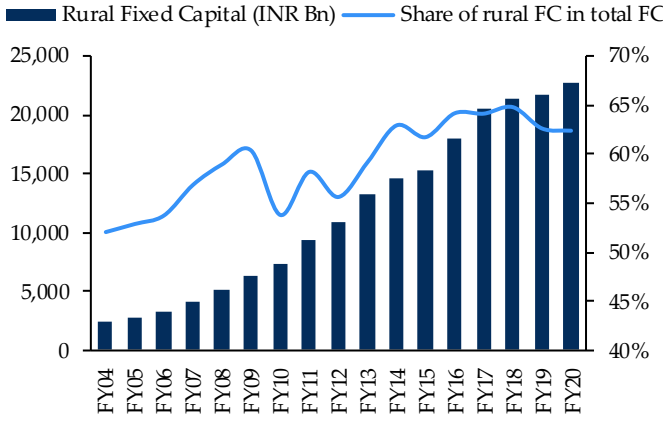
Source: CMIE, CSO, HSIE Research

Exhibit 70: Factories in rural India



Source: ASI, HSIE Research

Exhibit 71: Manufacturing fixed capital in rural India



Source: ASI, HSIE Research

Note: A factory is defined based on the Sections 2m(i) and 2m(ii) of the Factories Act 1948

As seen in exhibit 69, manufacturing has long been prevalent in rural India. The allure of rural India for private companies is quite obvious; cheap land, labour, and energy costs help their operating margins. Since FY11, rural manufacturing has contributed more than half of the economy's manufacturing GVA. These facts are also reflected in exhibits 70 and 71, which show the bourgeoning

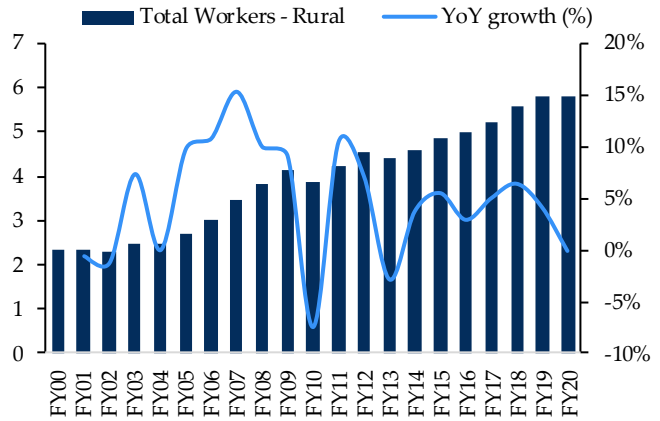
growth of rural factories and fixed capital. The dip in the share of rural India from FY08-12 is due to two reasons:

- A higher percentage of factories were built in urban and semi-urban regions during the capex cycle of FY08-FY12.
- Decommissioning of older factories in rural India

Barring this four-year blip, the share of rural India in total manufacturing has been steadily growing. The below charts explain its impact on rural employment in manufacturing.

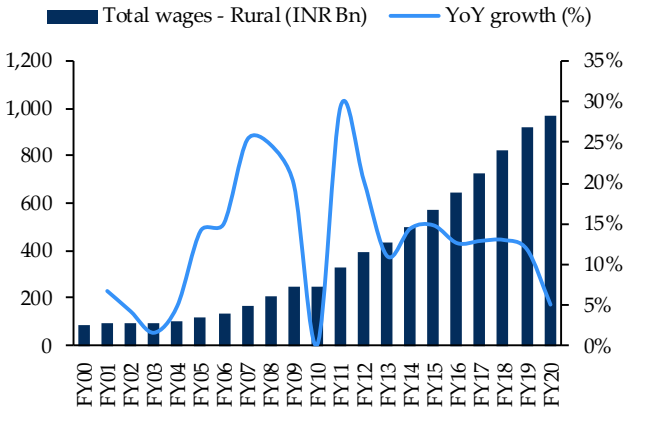
The merits of manufacturing for the rural workforce

Exhibit 72: No. of manufacturing workers in rural India (Mn) with YoY growth



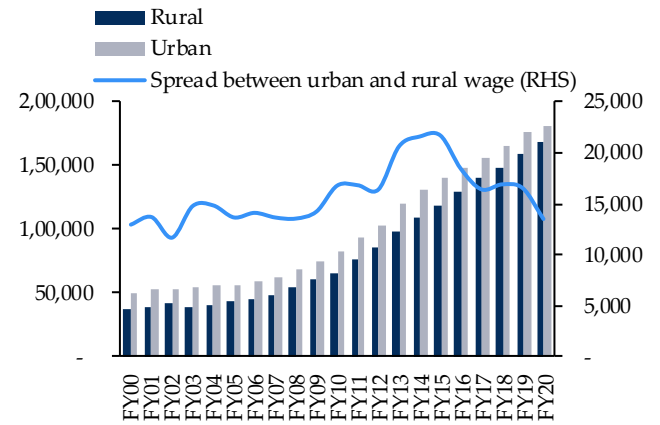
Source: ASI, HSIE Research

Exhibit 73: Total rural manufacturing wages (INR Bn) with YoY growth



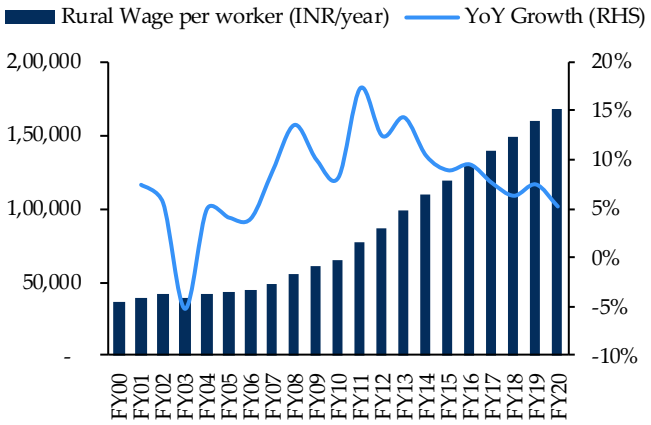
Source: ASI, HSIE Research

Exhibit 74: Annual mfg. wages per worker (INR/year)



Source: ASI, HSIE Research

Exhibit 75: Rural mfg. wages per worker (INR/Year)

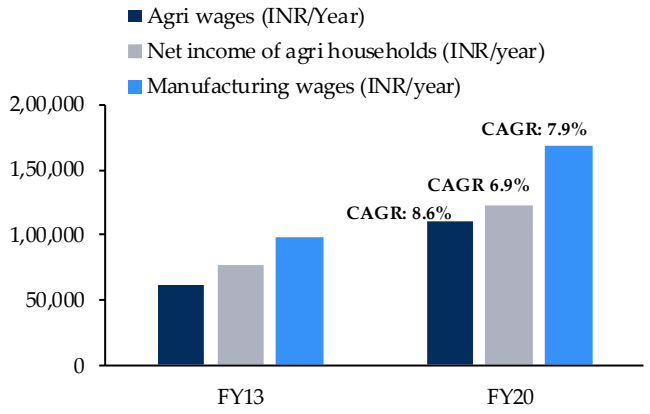


Source: ASI, HSIE Research

- As evident from the charts above, the increase in fixed capital in rural India has naturally led to an increase in employment for manufacturing workers and total wage outlay in rural India.
- Furthermore, rural manufacturing wage per worker has grown consistently since FY03 and accelerated during the earlier capex cycle till FY12 due to increased demand for workers. It later moderated due to the higher base effect. Additionally, with increasing fixed capital addition, rural wages have grown faster than urban wages and, hence, the spread between the two has

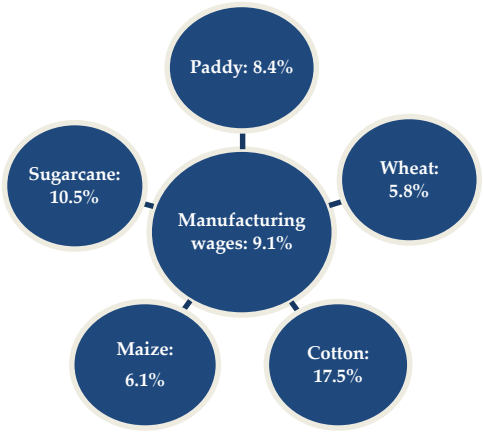
declined over the years. This has incentivized some of the workers to choose reverse migration and opt to work closer to their home villages.

Exhibit 76: Real manufacturing wage growth consistently positive



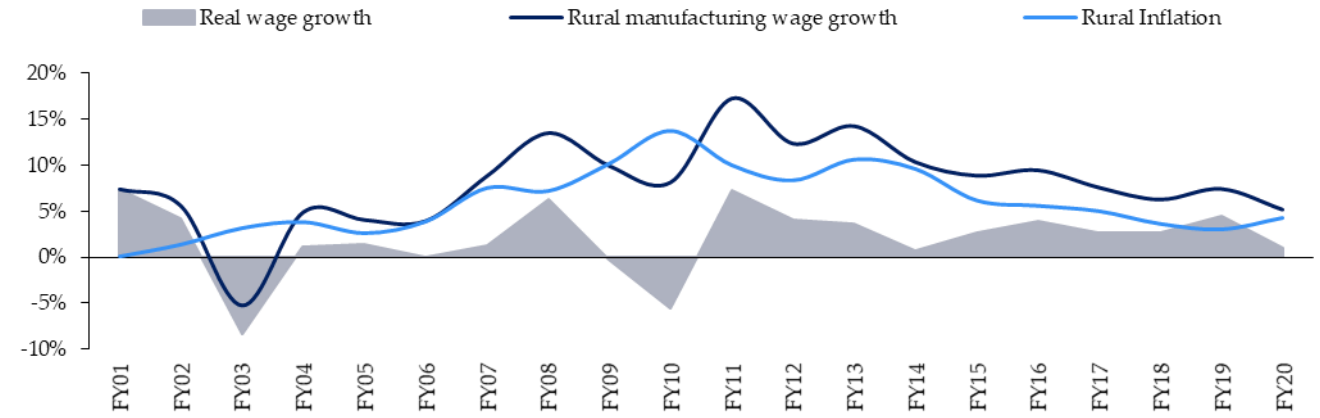
Source: NSSO, ASI, HSIE Research

Exhibit 77: CAGR of net income from FY11 to FY20 for major crops compared to manufacturing wages



Source: NSSO, ASI, HSIE Research

Exhibit 78: Real manufacturing wage growth consistently positive



Source: ASI, HSIE Research

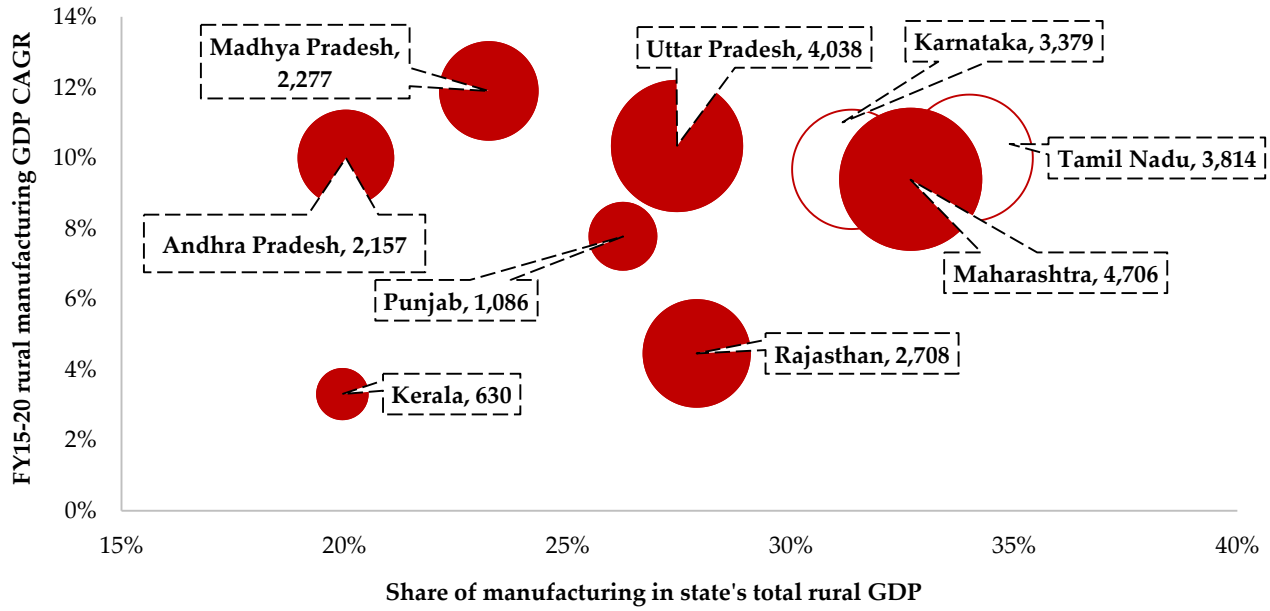
- The manufacturing wages earned per worker have grown at a CAGR of 9.1% from FY11 to FY20, annually outpacing rural inflation by 330 bps on average during this period.
- Exhibit 76 compares rural manufacturing wage growth to the net income growth of major crops. Barring sugarcane and cotton, manufacturing wages have outgrown all other major crops over the past decade. Since cotton and sugarcane cumulatively account for ~8-9% of total crops produced in India, their relatively high growth rates have a disproportionately lower impact on total farmer income. The cumulative impact of all crops on farmer incomes can be seen in exhibit 77.

All signs point to manufacturing jobs being a very lucrative option for the rural workforce. If so, why are there only ~6 mn workers in rural factories as of FY20? The simple answer is that there aren't enough jobs available as there is a limited number of workers each factory can employ. For rural manufacturing jobs to increase at a faster pace, industrial gross fixed capital needs to be directed towards rural India, going forward.

Capitalization of mammoth capacities in rural India

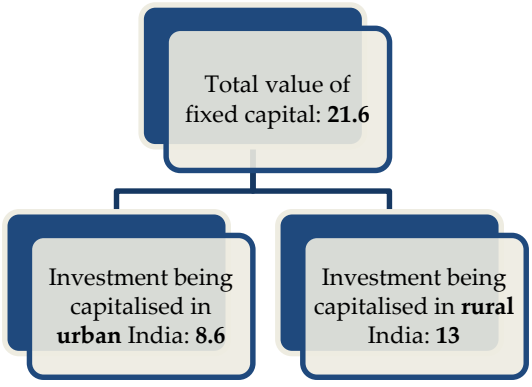
The next stage of our analysis is to assess if there was any visible traction in additional fixed capital being capitalised in rural India. We have scoured the majority of under-implementation manufacturing projects above INR 10 bn in India. After going through the project-wise data, we have segregated the projects by geography, industry, and the rural/urban nature of the project location. **Based on our analysis, we have found that rural India is attracting most of the gross fixed capital during the current CAPEX cycle. This is expected to add a relatively larger number of manufacturing jobs in rural India and in turn lead to manufacturing wage growth.** We have done a bottom-up analysis of the under-implementation rural projects and the states they are being capitalised in. We will look at 9 states in particular that account for ~72% of the rural manufacturing GVA in India. The following bubble chart reflects the significance of rural manufacturing for shown states. It is evident that for states like Karnataka, Tamil Nadu and Maharashtra, manufacturing is not only a substantial portion (>30%) of their rural GDP, but their growth rates are also noticeable.

Exhibit 79: Snapshot of rural manufacturing GDP in key states



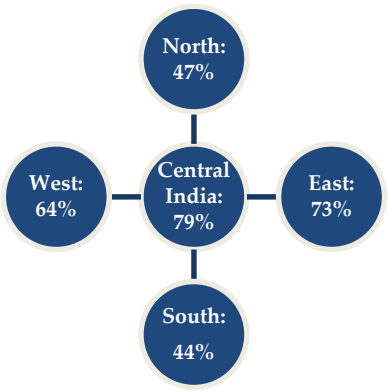
Note: Size of the bubble represents absolute rural manufacturing GDP for each state in INR Bn
Source: DES documents of various states, HSIE Research

Exhibit 80: Total under implementation projects in India as of January 2023 (INR trn)



Source: CMIE, MoSPI, HSIE Research

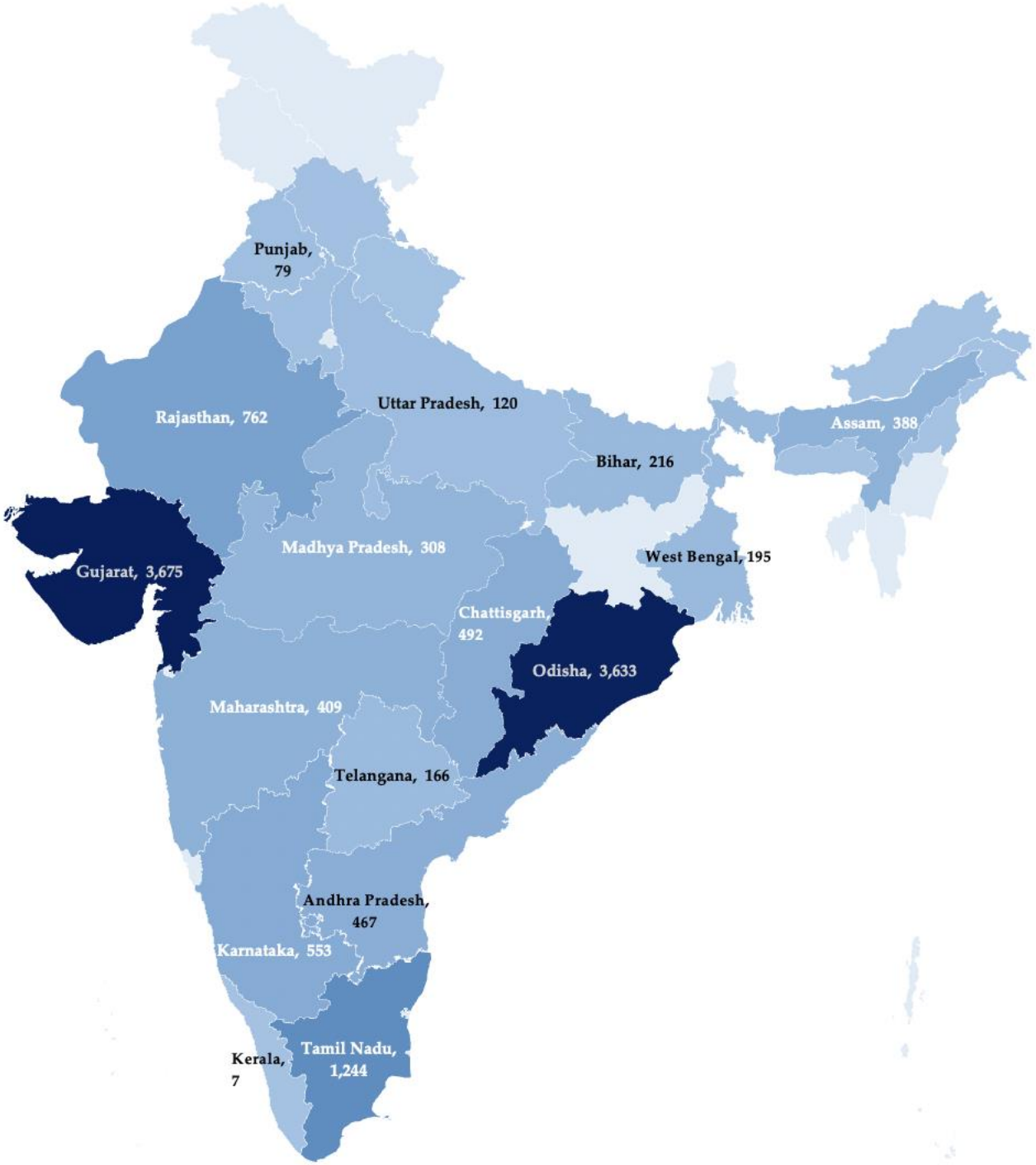
Exhibit 81: Share of rural fixed capital in total under implementation projects in each geography



Source: CMIE, MoSPI, HSIE Research

- The charts above corroborate our earlier argument that due to lucrative land, labour, and energy costs in rural areas, the larger share of investments that are capitalized in India are being deployed in rural India.

Exhibit 82: Split of total under implantation fixed capital in rural regions by geography (INR bn)



Source: CMIE, MoSPI, HSIE Research

- The total estimated value of projects currently under implantation in India is ~INR 21 trn, with ~60% of it expected to be capitalised in rural India.
- Exhibit 82 shows the state-wise bifurcation of the ~INR 13 trn worth of manufacturing projects currently under implementation in rural India. Evidently, ~66% of rural projects are concentrated in two states—Odisha and Gujarat.

- Of the ~INR 13 trn worth of investments in rural India, ~54% of the total investment value is being capitalised in the steel and refinery industries.

Industry-wise concentration of manufacturing capacities being built across states

Exhibit 83: Industry-wise split of investment value in rural regions – Tamil Nadu

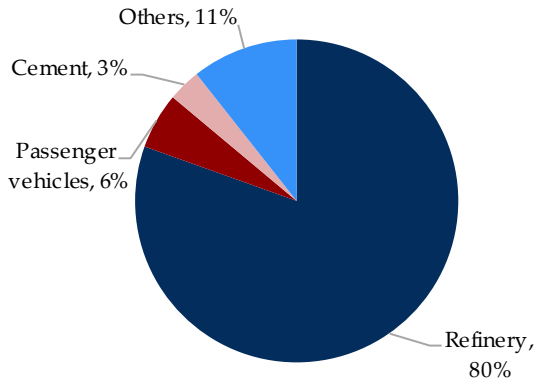


Exhibit 84: Industry-wise split of investment value in rural regions – Rajasthan

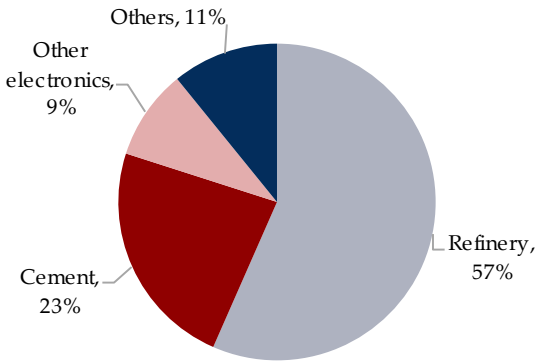


Exhibit 85: Industry wise split of investments in rural regions – Karnataka

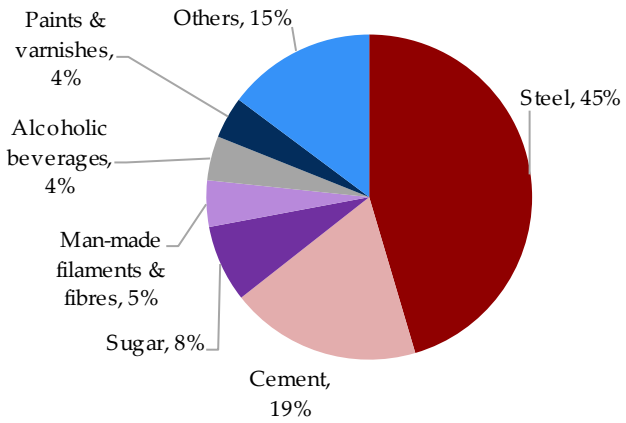


Exhibit 86: Industry wise split of investment value in rural regions – Andhra Pradesh

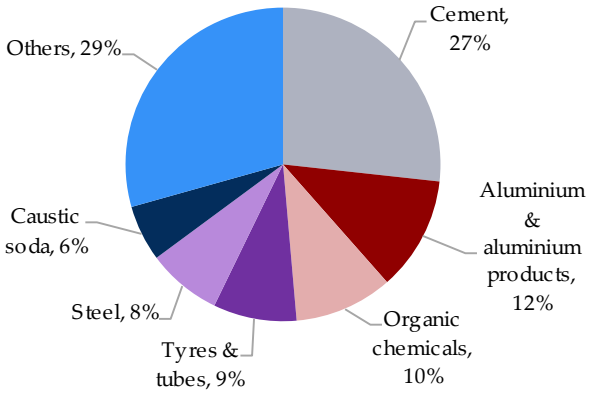


Exhibit 87: Industry-wise split of investment value in rural regions – Maharashtra

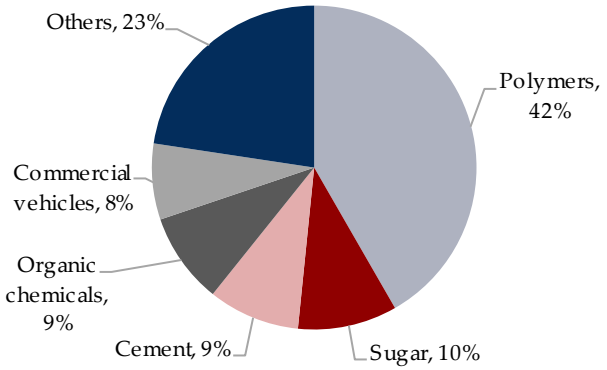


Exhibit 88: Industry-wise split of investment value in rural regions – Madhya Pradesh

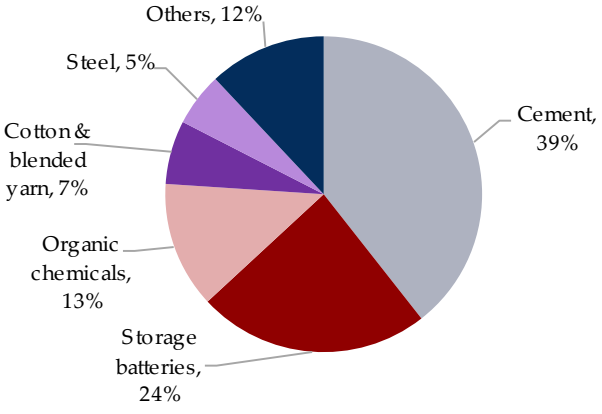


Exhibit 89: Industry-wise split of investment value in rural regions – Uttar Pradesh

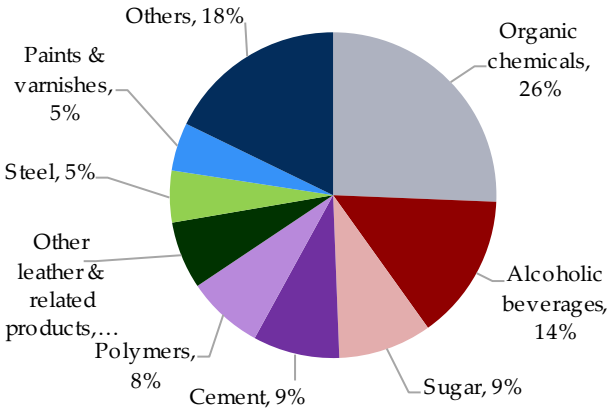


Exhibit 90: Industry-wise split of investment value in rural regions – Punjab

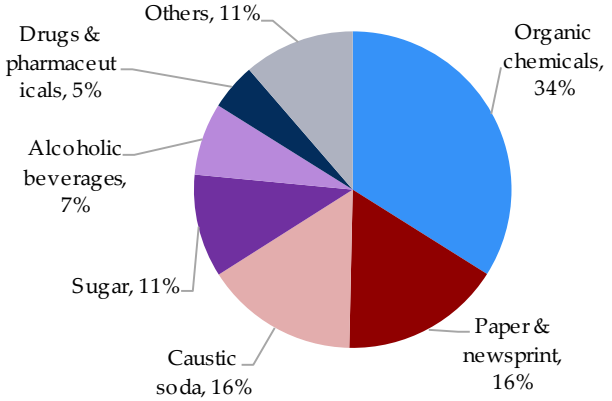


Exhibit 91: Industry-wise split of investment value in rural regions – Kerala

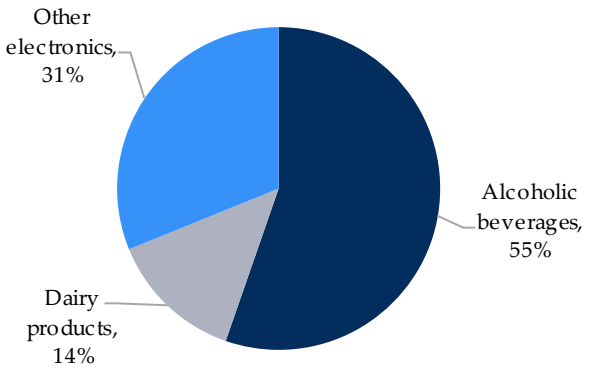
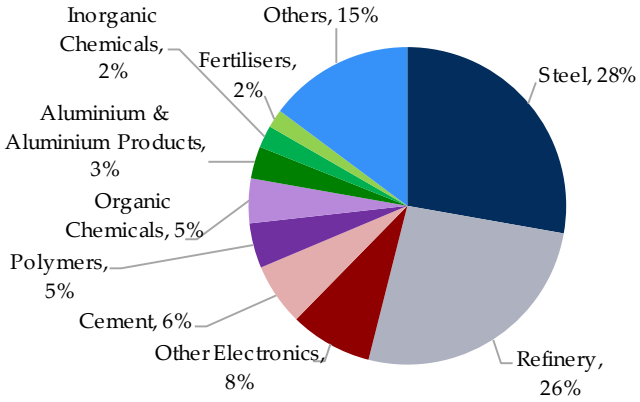


Exhibit 92: Industry-wise split of investment value in rural regions – Pan India



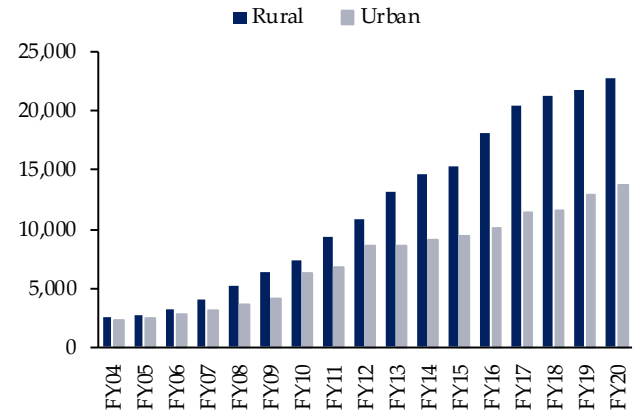
Source: CMIE, MoSPI, HSIE Research

- With the help of the above charts, we have quantified the value of fixed capital expected to be capitalised in rural India over the next five years and their region-wise industry concentration.
- While at the pan-India level, refinery and steel sectors will witness the highest proportion of overall investments being done, various states focus on their individual preferential segments. For example, Kerala would see the majority of its manufacturing capacities coming up in the alcoholic beverages sector but Tamil Nadu and Rajasthan are concentrating on setting up refineries.

The next sub-section of the report will explore the characteristics of rural manufacturing and supplement them with the expected investment to take place in rural India to estimate employment opportunities in rural regions over the forthcoming years.

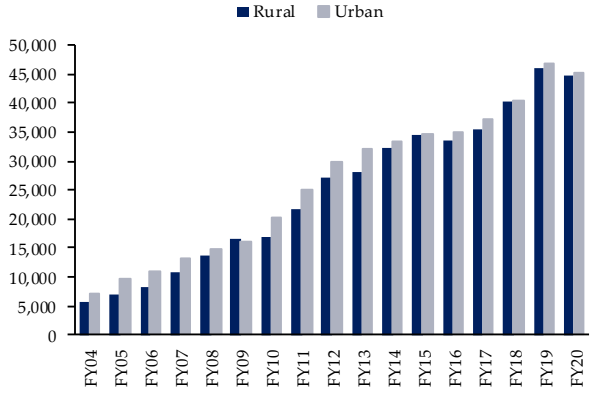
Rural manufacturing; potential employment opportunities

Exhibit 93: Rural and Urban fixed capital (INR Bn)



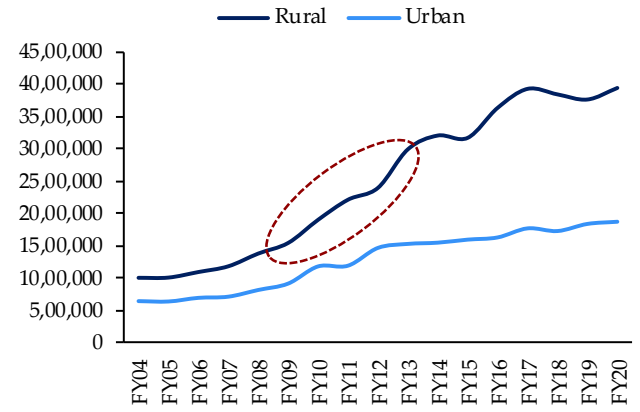
Source: ASI, HSIE Research

Exhibit 94: Rural and Urban Gross output (INR Bn)



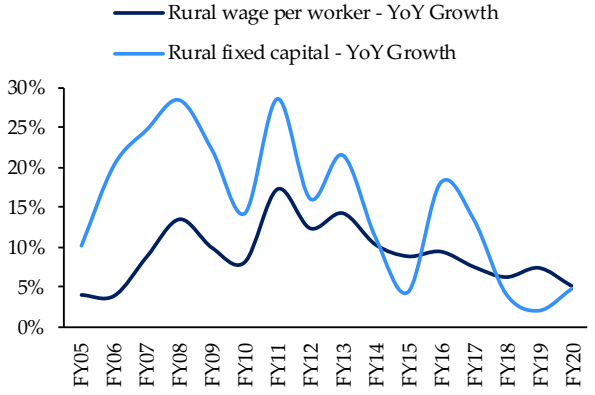
Source: ASI, HSIE Research

Exhibit 95: Gross fixed capital per worker



Source: ASI, HSIE Research

Exhibit 96: Wages per worker—moving in tandem with growth in manufacturing fixed capital



Source: ASI, HSIE Research

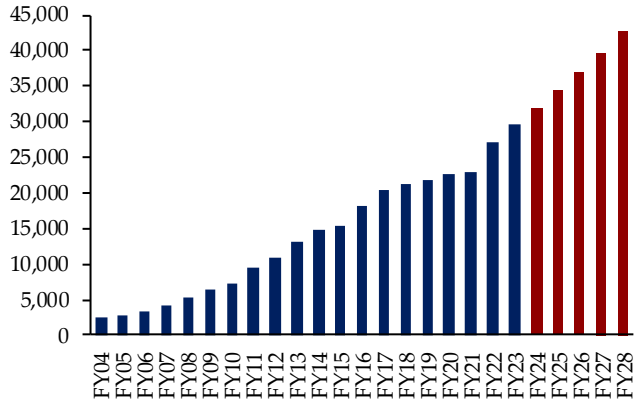
The preceding charts provide some insightful comparisons between rural and urban manufacturing:

- Rural fixed capital is much higher than urban fixed capital but the value of its gross output is marginally lower. The output per unit of investment is higher in urban India, likely as a function of the product mix of the goods manufactured. This helps explain the difference in asset turnover between rural and urban manufacturing as well.
- The gross fixed capital per worker is significantly higher than its urban counterpart. This indicates higher labour intensity in urban manufacturing, possibly as a function of a more educated and well-trained labour force found in urban regions.
- Exhibit 95 shows the relationship between the fixed and human capital mix in both urban and rural manufacturing. The circled section of the chart highlights this ratio for rural manufacturing from FY07 to FY13 and the previous capex cycle which saw rural fixed capital nearly triple. Interestingly, the gross fixed capital per worker nearly tripled as well in the meantime, indicating a lower mix of human capital during a capex cycle.
- There is a strong correlation of 0.62 between growth in rural fixed capital and growth in manufacturing wages per worker. The rationale for this is intuitive as higher gross block capitalisation would increase demand for factory workers and, in turn, increase the wages offered to the employees.

Based on the characteristics of rural manufacturing and the expected fixed capital that will be capitalised in the forthcoming years, we can estimate the number of jobs that will be added to the rural workforce, as well as the incremental increase in the rural wage pool. The following assumptions have been made to carry out this analysis:

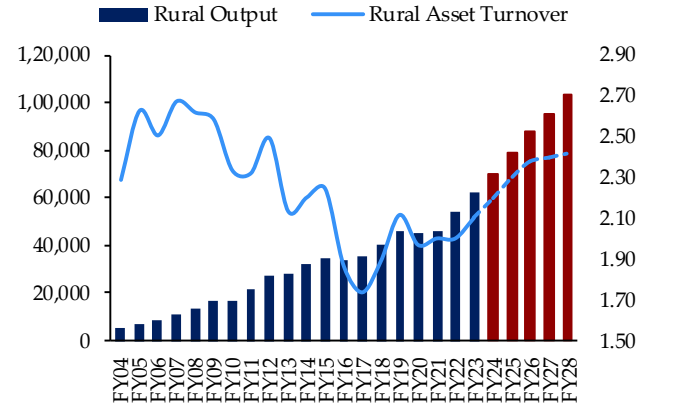
- Assumed capitalisation of the projects over a span of five years—FY23 to FY28.
- Rural fixed capital asset turnover has been calculated by the output and fixed capital numbers provided by the Annual Survey of Industries (ASI) documents. Using the asset turnover, the estimated output of rural manufacturing can be calculated.
- Using the aforementioned gross fixed capital per worker ratio, the number of jobs to be created can be estimated. A higher ratio has been used every year to account for a more conservative fixed capital to human capital mix.
- Rural wages have been estimated by keeping the wages-to-output ratio constant for the next five years.
- Based on the state-wise split of under-implementation projects, the fixed capital per worker ratio has been used to estimate the number of rural manufacturing jobs expected to be added over the next five years.
- The below self-explanatory charts underline trends of rural fixed capital growth, efficiency-led output, wage pool growth and wage per rural worker.

Exhibit 97: Estimated rural fixed capital (INR Bn) steadily being capitalised from FY23 to FY28



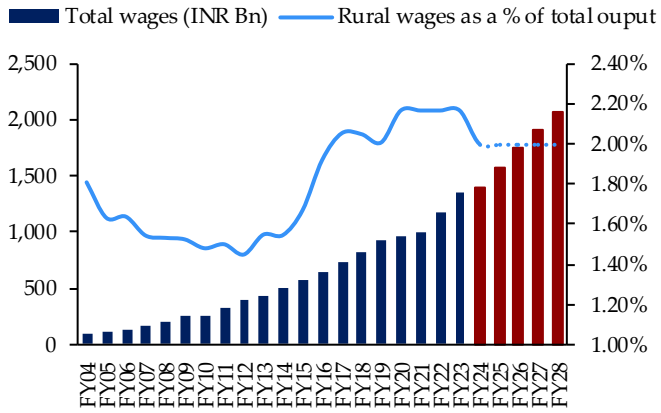
Source: ASI, HSIE Research

Exhibit 98: Rural output (INR Bn) increasing rapidly as a function of efficiency-led higher asset turnover

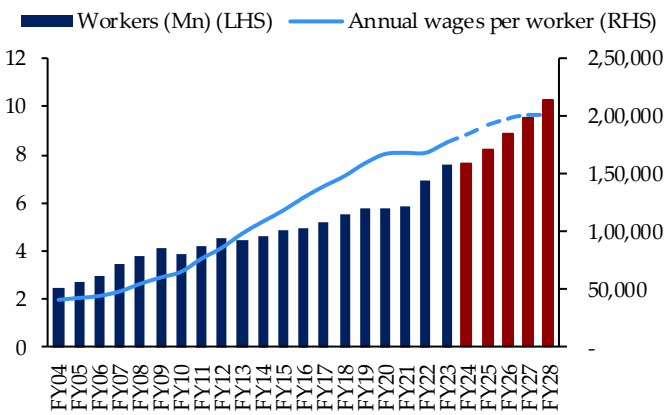


Source: ASI, HSIE Research

Exhibit 99: Estimated total rural manufacturing wage pool increasing progressively; higher rural manufacturing workers and wages per worker to aid rural consumption going forward.



Source: ASI, HSIE Research



Source: ASI, HSIE Research

- **We estimate that the ongoing under-implementation projects will create 2.6 mn additional jobs in the next five years and in the process wage/worker will grow at 3% CAGR in the same period. Overall, the wage pool will grow at a more respectable 9% between FY23 and FY28, which will result in a new job creation CAGR of 6%. Additions of new workers in the manufacturing workers pool (rising to 10.2 mn workers in FY28 from 7.6 mn in FY23) will keep individual workers' wage growth under pressure.**

- State-wise job creation numbers can be observed in the below table. Gujarat and Odisha will witness 55% of overall manufacturing jobs created due to the concentration of under-implementation investments in these states. Tamil Nadu, Rajasthan and Karnataka will be other notable states, which will contribute meaningfully to employment creation in the manufacturing sector for the next five years.

Exhibit 100: Estimated total rural manufacturing fixed capital and rural manufacturing jobs to be added from FY23 to FY28

State Name	Fixed Capital (INR Bn)	Total number of estimated jobs
Andhra Pradesh	467	93,673
Chhattisgarh	492	98,603
Gujarat	3,675	7,36,882
Karnataka	553	1,10,963
Kerala	7	1,481
Madhya Pradesh	308	61,812
Maharashtra	409	81,931
Odisha	3,633	7,28,460
Punjab	79	15,898
Rajasthan	762	1,52,826
Tamil Nadu	1,244	2,49,502
Uttar Pradesh	119	23,928
Others	1,350	2,70,691
Total	**13,100**	**26,26,649**

Source: ASI, CMIE, HSIE Research

Key conclusion: Manufacturing provides an opportunity of stable employment for the rural population. As explored in this section, the nation's manufacturing dream is largely being realized in rural regions, adding ~INR 13 trn worth of fixed capital and ~2.6 mn rural jobs in total from FY23 to FY28. With a total increase in the rural manufacturing wage pool of ~INR 700 bn over the period, rural manufacturing is set to play its much-awaited part in the growth of rural India.

Rural per capita income recovery analysis

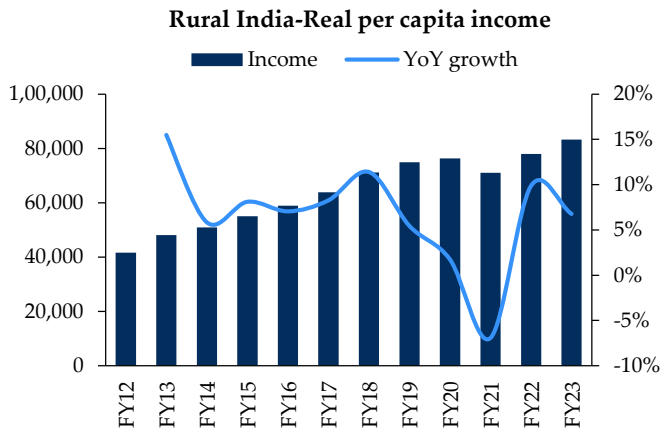
A health check of rural economy based on per capita real income

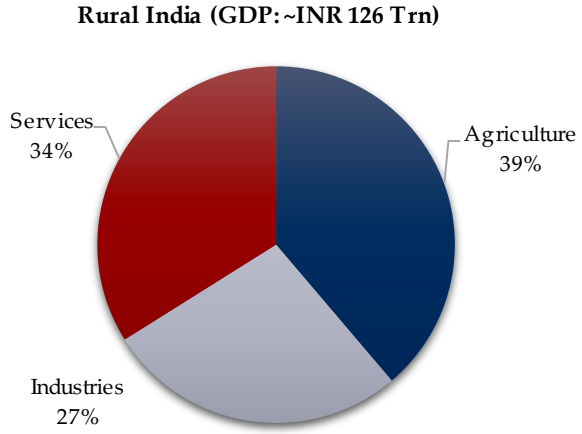
In the earlier sections of the report, we have analysed the performance of various segments of the rural economy. Pursuant to that, in this current section, we are presenting their impact on the real rural per capita income. The purpose of this analysis is to understand whether growth in a particular segment is helping improve spending power of the rural mass, and if answer is affirmative, which states are the key beneficiaries.

Methodology: India's **r**ural population is 909 mn, which is approximately 67% of the country's overall population. These people live in 766 districts of India across 36 states and union territories. We have termed a district as a "rural district" if more than 50% of its population lives in rural areas within the district, as per census 2011. Further, to assess the economic strength of rural India, we have collected granular data about the "Gross District Domestic Product (GDDP)" of 337 individual Indian districts. As per the availability of the data, we have taken a sample of 10 leading states of India representing 65% of India's GDP and ~76% of India's rural GDP. This includes Andhra Pradesh, Telangana, Tamil Nādu, Maharashtra, Karnataka, Kerala, Punjab, Rajasthan, Uttar Pradesh and Madhya Pradesh. Further, the real per capita income of such districts is analysed to observe their growth trends. It is worth noting that, to measure the true growth of earning power of the rural population, the effect of inflation has been completely removed from per capita income calculations. Accordingly, prices from December 2010 were used as the base, and nominal earnings for subsequent years were calibrated using the prices from the base month as the standard for comparison.

Observations: As per our analysis, we observe that the per capita income of the rural India sample in real terms has grown from INR 41,675 in FY12 to INR 83,271 in FY23, which translates into a CAGR of 6.5%. It can be noticed in the below chart that the real per capita income of overall rural India underwent a visible decline in FY21 (INR 70,995) during Covid-19 but recovered smartly in subsequent years. Hence, per capita income, which had made a decadal peak in FY20 at INR 76,272, was surpassed marginally in FY22 and significantly in FY23, when this figure was an impressive INR 83,271. If we apply the impact of the inflation index, we can conclude that rural income for India in nominal terms in FY23 was INR 149,055 (i.e. USD 1,818), which for the overall sample space (including urban areas), was USD 2,308. Additionally, it should be highlighted that agriculture is no longer the exclusive driver of the Indian rural economy, contrary to popular assumption. A burgeoning service industry in rural India, led by trade, restaurants, hospitality, real estate and finance, is giving the rural economy a significant structural push.

Exhibit 101: Rural recovery; observing real per capita income (INR) of rural India to monitor changes in purchasing power





Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Contribution of states towards Rural India's GDP

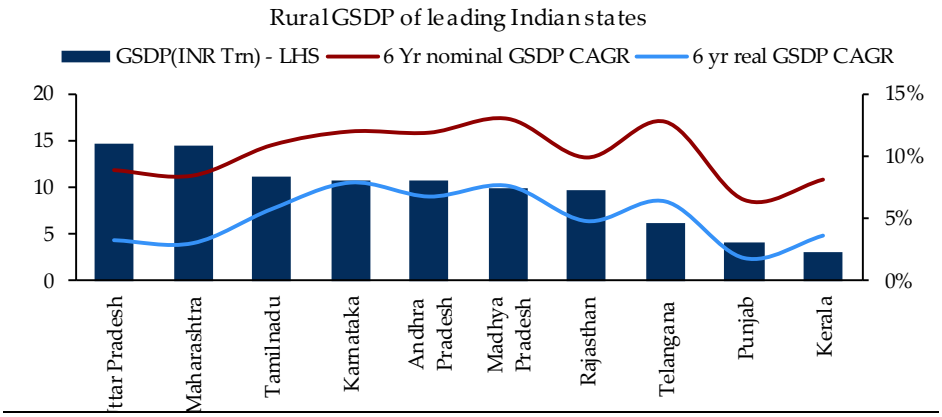
- Exhibit 102 reflects that agriculture in India is mainly led by Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, Maharashtra, Rajasthan and Karnataka, which together contribute 48% of the country's agricultural GDP. "Others" of the agricultural section include states such as Bihar, West Bengal, Odisha, Assam and Haryana.
- On the front of rural manufacturing, major contributions come from more industrialised states such as Maharashtra, Uttar Pradesh, Tamil Nādu, Karnataka and Rajasthan together accounting for 54% of rural manufacturing GDP. It is noteworthy that the growth of manufacturing is visible in rural areas as land and factory set-up cost in these locations is relatively cheaper than those in their urban counterparts. Given the central government's unequivocal strategy of bringing investment-led growth in the country, we believe rural manufacturing has more legs to grow.
- Additionally, rural services have grown impressively and now form 34% of India's rural GDP, not much behind rural growth protagonist "Agriculture" which contributes approximately 39%. This segment is mainly led by Uttar Pradesh, Maharashtra, Tamil Nādu, Karnataka and Rajasthan cumulatively accounting for 63% of the rural services GDP of India.

Exhibit 102: Contribution of states to segments of rural GDP (FY23)

	Agriculture	Industries	Services
Madhya Pradesh	10%	7%	6%
Andhra Pradesh	10%	6%	9%
Uttar Pradesh	9%	12%	15%
Maharashtra	7%	14%	14%
Rajasthan	7%	8%	8%
Karnataka	5%	10%	12%
Tamil Nadu	4%	11%	13%
Telangana	4%	3%	8%
Punjab	3%	3%	3%
Kerala	1%	2%	4%
Others	39%	25%	8%
Total	**100%**	**100%**	**100%**

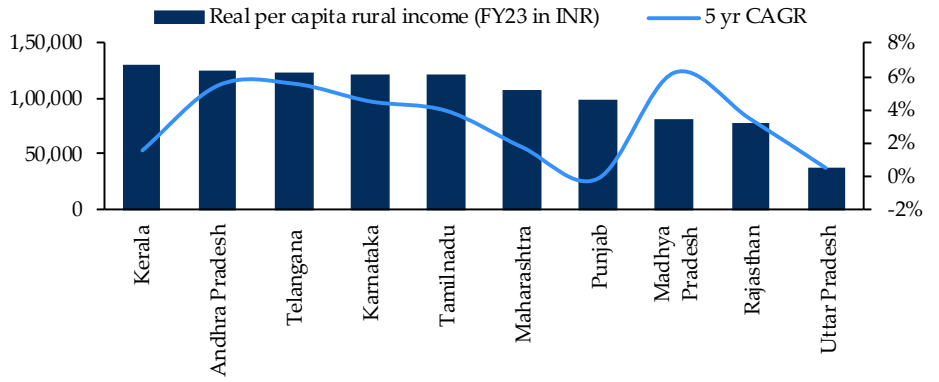
Source: Source: Economic survey of various states, HSIE Research

Exhibit 103: Contribution of states towards overall rural GDP of India



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Exhibit 104: Real per capita income of rural population of various states in FY23 (Base: Dec'10)



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

- The two charts above represent a comparison of rural GSDPs of various states and their real per capita incomes.
- It is evident that UP and Maharashtra have the two biggest rural economies; however, their real growth CAGR over the last six years has been muted.
- Southern states such as Tamil Nādu, Karnataka and Andhra Pradesh contribute more than INR 10 trn each to India's rural economy and these have grown at an impressive 6-8% CAGR in the last six years in real terms.
- Punjab and Kerala are smaller contributors and their growth rates aren't very remarkable too.
- It is important to highlight that all five southern states such as Kerala, Tamil Nādu, Andhra Pradesh, Telangana and Karnataka have real per capita incomes for FY23 higher than INR 1 lakh, which in nominal terms would be in the range of INR 170,000-175,000 depending upon inflation index of respective states. This corresponds to a level of USD 2,075-2,135. This indicates that consumers of southern states have adequate capacity to spend on consumer discretionary products. This bodes well for consumer discretionary companies focusing on target customer segments present in rural south India.

- Although Madhya Pradesh doesn't have the highest-earning individuals, its growth rate in real per capita income is the highest. Impressive agriculture growth recorded in the state has been the key reason for this.
- The most populous state Uttar Pradesh has the lowest real per capita income at INR 38,474 and the growth rate is subdued as well. Given its large population, India's rural recovery in the true sense is largely dependent on the recovery of Uttar Pradesh. Further, Punjab has given signs of stagnating real per capita income due to the struggling agriculture economy in the state.

In this current section, we will be analyzing sector-wise economic growth in various states.

Telangana:

- Rural Telangana with a GSDP of INR 6,072 bn has seen its real per capita income rebounding sharply post the pandemic in FY21, led by its growing service sector. Hence, as shown in the chart below, real per capita income which dipped to INR 103,357 in FY21 during the pandemic, bounced back sharply in FY22 and stood at INR 122,865 in FY23 surpassing the previous peak made in FY20. Hence, the rural economy of the state can be considered to have recovered.
- Telangana is one of the better rural economies of India with higher real per capita earnings than the national average. This can be attributed to the growing real estate and professional services in the state followed by trade, hotels and restaurants. Services contribute towards 54% of the state's rural economic output.
- Furthermore, agriculture which forms 31% of the output has grown at an impressive 12.5% CAGR in the previous decade, although on a smaller base. While crops grew at 10.3% CAGR in this period, livestock grew much faster at a CAGR of 15.3%, making it a leading contributor to overall output.
- Although the growth of the economy is well diversified across districts, leading contributors are Sangareddy, Nalgonda, and Nizamabad. Sangareddy is led by industries such as factories of BHEL, Bharat dynamics, ordnance factory, MRF, Aurobindo Pharma, and M&M. Further, while Nalgonda has agriculture and several textile mills driving its economy, Nizamabad boasts of rice, sugar mills and a booming local real estate market.
- There are a few districts which are emerging as high-growth economic regions such as Karimnagar, Medak, Yadadri, Kamareddy and Nagarkurnool, which have reported double-digit growth for the last six years.

Exhibit 105: Real per capita income (INR) - Telangana

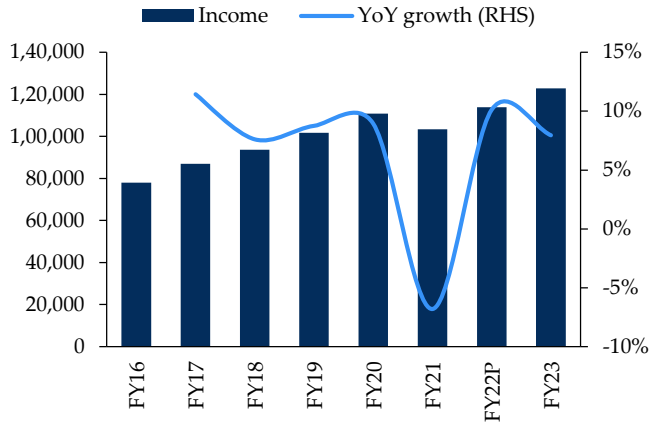
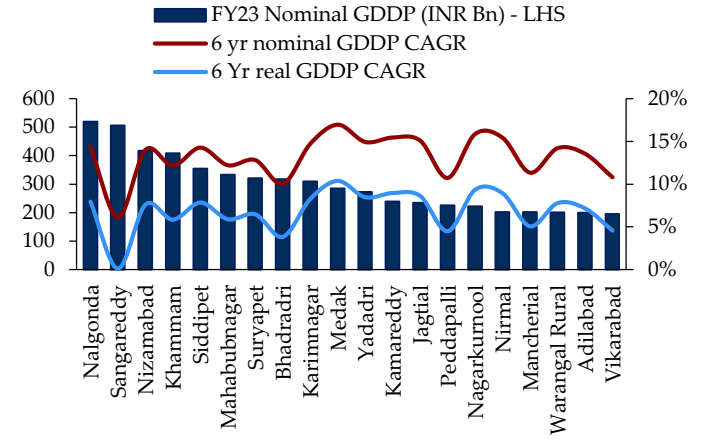


Exhibit 106: District wise GDDP – Telangana



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Karnataka

- Rural Karnataka also has been a services-led economy, which has enabled it to report impressive growth in its real per capita income over the years (as per the below chart). In spite of a slight decline in FY21, rural Karnataka has revived strongly and now real per capita income stands at INR 121,772 in FY23, as compared to INR 100,888 in FY20.
- The dominant contribution of 47% by the services sector in the economy of rural Karnataka is led by real estate, ownership of dwellings and IT & enabled services, which grew at ~11% CAGR between FY17 and FY22. This was ably supported by the trade, hotels and restaurants sub-sector, with a growth CAGR of 10%. Accelerated development of infrastructure over the years such as transportation has also laid the foundations for rapid expansion of services related to this sector in the state. The point worth noting is that in spite of the rising services sector, 46% of the working population of the state is still engaged in agriculture. We expect this proportion to gradually reduce as more employment opportunities get generated in the services and manufacturing sectors.
- Agriculture is another contributor (~22% of rural output) to the growth in rural part of the state. It grew at a rapid pace of 14.2% CAGR in the last decade, although on a small base. Within agriculture, crops grew at 13.3% CAGR but livestock grew at a much faster clip of 17.7% CAGR in the same period. Both these subsectors together accounted for ~90% of the agricultural output of the state.
- Additionally, leading districts helping the state report stronger growth are Dakshina Kannada, Belagavi, Tumakuru, and Mysuru. While the Belgavi economy is driven by automotive & aerospace-related manufacturing and sugar factories, Dakshina Kannada boasts of coffee, timber, cashew nuts exports, petrochemical refining units, logistics and shipping as its economic pillars. Tumakuru district people are mainly involved in coconut and paddy cultivation, whereas Mysuru GDDP is led by tourism & IT.

Exhibit 107: Real per capita income (INR) - Karnataka

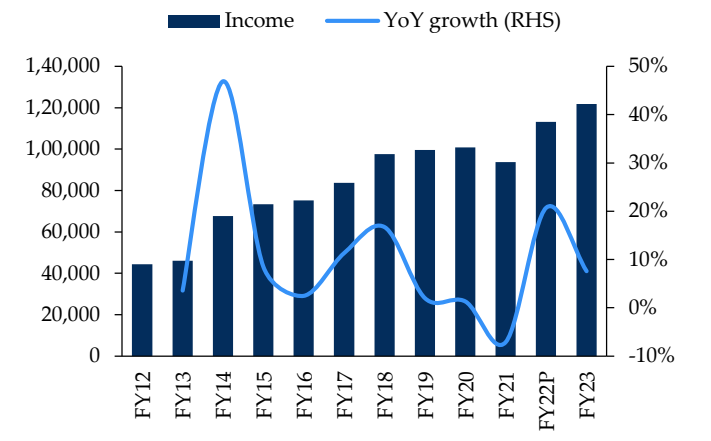
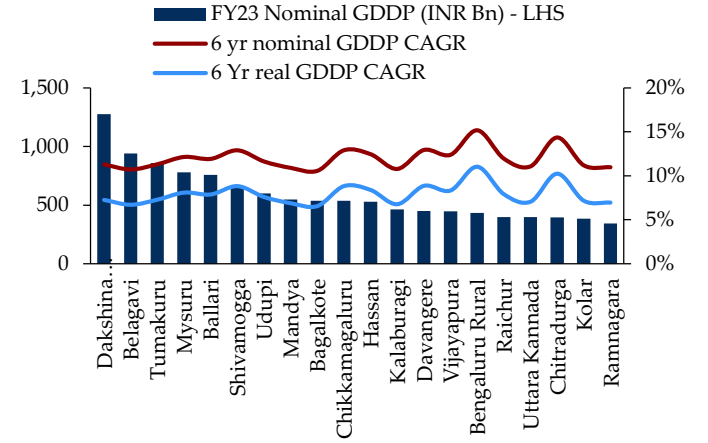


Exhibit 108: District wise GDDP – Karnataka



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Tamil Nadu

- Driven by the growing service and manufacturing sector, the per capita real income in rural Tamil Nadu has grown rapidly over the years. It has grown an absolute 50% since FY15 in real terms and today stands at INR 121,048 in FY23, much higher than the previous peak observed in FY20.
- Tamil Nadu is highly urbanized (~48%) as well as the most industrialized state in the country. While Tamil Nadu has historically been an agricultural state, advancements in various other sectors made it an industrialized and services-based economy. Industry & services contributed 34% and 48% of overall rural GSDP in FY23 respectively.
- Agriculture in the state has also grown at a double-digit growth rate in the last decade in nominal terms with livestock outpacing crop production. The sector accounted for 18% of the output in FY23.
- Rural areas of the state enjoy advanced renewable electricity generation plants accounting for 16% of national capacity. On the industry front, rural Tamil Nadu boasts of plants of BHEL, Titan, SAIL, etc.
- Leading contributors to the state's rural GDP are Vellore, Trichy and Namakkal. Most districts have grown at an impressive 6% or more in real terms in the last six years.
- IT & ITES has been a major driver of growth for districts like Salem, Trichy, and Madurai. Auto and auto component industries have been instrumental in the growth of various districts such as Hosur and Madurai. Additionally, 635 engineering colleges of the state offer qualified manpower for fueling into prospering IT and ITES sectors. The presence of touristic attractions like Kodaikanal, Ooty, Mahabalipuram and approx. 79,000 temples in the state make tourism a significant revenue growth driver for the state.

Exhibit 109: Real per capita income (INR) – Tamil Nadu

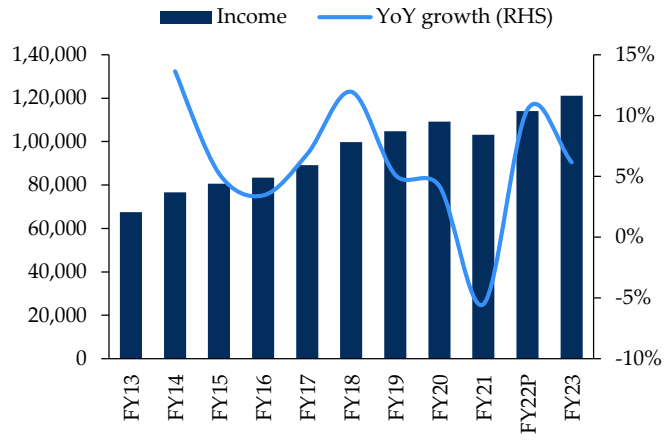
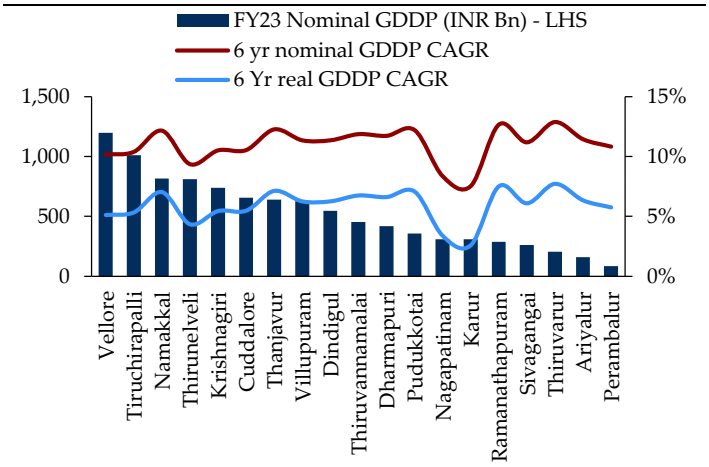


Exhibit 110: District wise GDDP – Tamil Nadu



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Madhya Pradesh (MP)

- In the country where the majority of the states have been growing on the back of a rising services sector, rural Madhya Pradesh has been an exception where growth is driven by the agriculture sector. Agriculture accounts for 52% of the rural GSDP of the state and has enabled the real per capita income of the rural population to almost double to INR 81,733 in past eight years.
- The charts below indicate that the rural MP economy didn't feel much pain even during the pandemic as it is an agriculture-led economy and crop production continued unabated. Major agri products of the state are soybean, grams, oilseeds, and pulses. MP is also known as "Soya Pradesh" as it produces 60% of the national soybean output. While crops continued to do well (15% CAGR since FY14 in nominal terms), livestock has been a bright spot which has grown at 23% in the last nine years.
- On the services sector front, which accounts for 25% of rural MP economic output, "trade, hotels, restaurants", "real estate"and "public administration" have grown strongly at 14%, 12% and 16% respectively between FY15 and FY20. These three subsectors were responsible for 65% of incremental GDP in the mentioned period.
- Leading districts contributing to the economy are Chhindwara, Ujjain, Sagar and Dhar, most of which have grown between 7 to 10% in real terms in the last six years driving the state's rural economy to new highs. All these mentioned districts are mainly agrarian economies. While Chhindwara is known as a corn city due to its fertile corn fields, Ujjain produces high-quality soybean and wheat. Additionally, the main crop of Sagar is wheat as well and Dhar is mainly into the production of soybean, wheat and maize.

Exhibit 111: Real per capita income (INR) – Madhya Pradesh

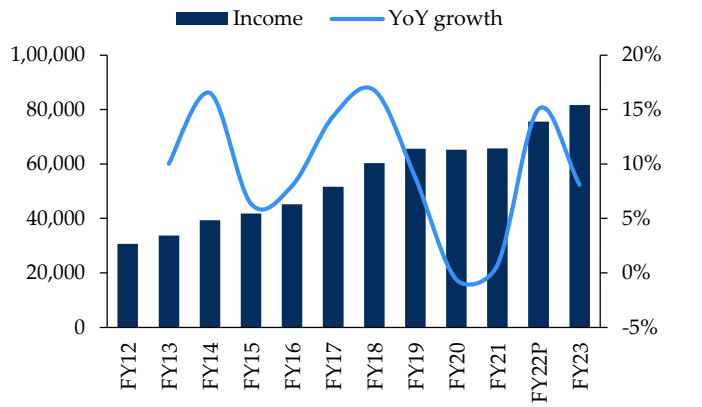
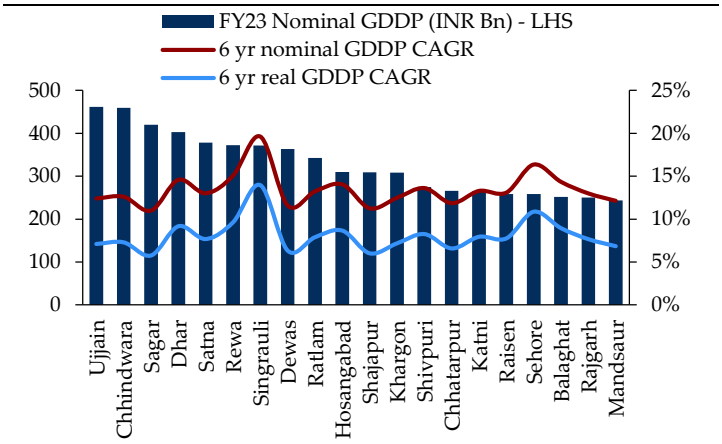


Exhibit 112: District wise GDDP – Madhya Pradesh



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Andhra Pradesh (AP)

- The per capita real income of AP has grown to INR 124,664 in FY23, which is much higher than its previous peak observed in FY20 (INR 110,795). This growth has been contributed by agriculture and services both. They contribute 43% and 37% respectively to overall rural output.
- It is worth noting that agri-subsectors such as "livestock" and "fishing & aquaculture" have been reporting impressive growth over the last nine years in nominal terms, which have grown at 16% and 22% respectively as against 11% of crops. These two sub-segments taken together now form 57% of the agri economy in the state as against 40% of crops.
- On the service sector front, "real estate & professional services", "transport & storage" and "financial services" are the key growth segments which account for 45% of service sector GSDP and have grown at a high single-digit rate in the last four years. The"trade, hotels and restaurants" segment (8% contribution to service sector rural GSDP) hasn't been very buoyant off late as several small establishments took a hit during the COVID-19 pandemic and were forced to shut shop in many districts.
- Krishna, Visakhapatnam, East and West Godavari are the key districts contributing to rural GSDP and growth. While Krishna and East Godavari have agriculture as their economic backbone with paddy and coconut being their major produce, Visakhapatnam's economy is driven by ports, fisheries and pharmaceuticals.

Exhibit 113: Real per capita income (INR) – Andhra Pradesh

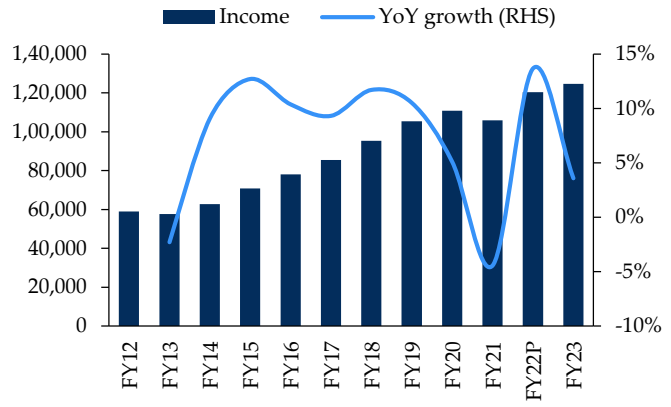
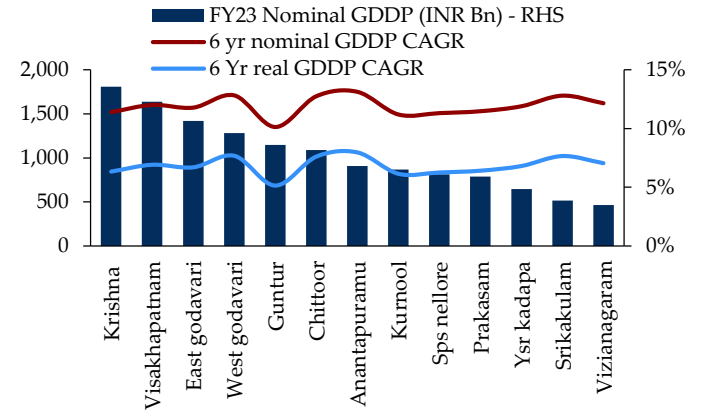


Exhibit 114: District wise GDDP – Andhra Pradesh



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Maharashtra

- The real per capita income of rural Maharashtra has witnessed consistent growth since FY12 before taking a pause from FY19 onwards. However, this showed a rising trend in recent years. The real per capita income has grown to INR 107,488 in FY23 surpassing the previous peak made in FY19 signifying an economic recovery. The services sector has been a dominant contributor followed by industries, with 42% and 33% contributions to rural output respectively.
- "Real estate & professional services" which takes the lion's share of the FY15-FY20 period's incremental addition to the service GSDP has grown at 12.7%. Other major contributors "trade, hotels and restaurants" have grown at 11.2%. "Financial services" has grown decently at a high single digit at 8.3%, driven by rising financial inclusion. These three sub-segments account for 71% of incremental service sector GSDP addition in the mentioned period, proving them to be the engines of growth.
- On the agriculture front, we notice that growth across all sub-segments crops, livestock, and forestry has been decent at ~9-10% but slower than the services sector. While crops and livestock account for 85% of the agri-economy, fisheries' contribution is insignificant. Hence, agriculture with a contribution of 25%, has only been a secondary driving force for economic expansion after services in rural Maharashtra.
- Leading districts contributing to the economy are Nashik, Ahmednagar, Kolhapur, and Solapur. Nashik has key industrial hubs driving its growth with the presence of companies like CEAT, Crompton, GSK, HUL, L&T, M&M, USL, Siemens, VIP, IOCL, Sula and Samsonite. Further, Ahmednagar boasts of more than half of the sugar production of the state while Kolhapur's economy is led by the textile industry, apart from jaggery production. Solapur, another key district, has a thriving textile market that is famous for handlooms.

Exhibit 115: Real per capita income (INR) – Maharashtra

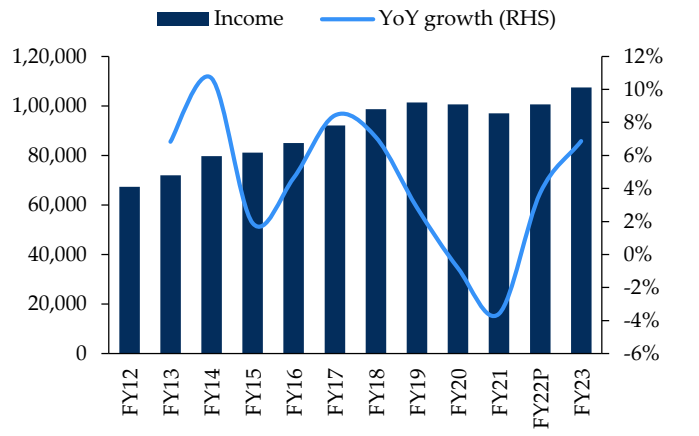
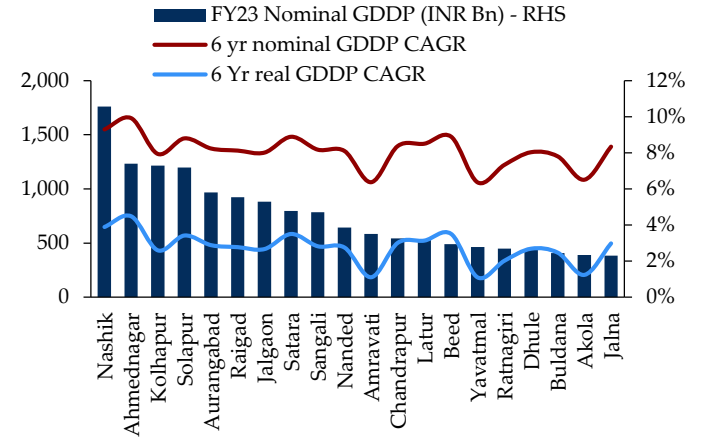


Exhibit 116: District wise GDDP – Maharashtra



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Rajasthan

- The real per capita income of rural Rajasthan grew at 6% between FY17 and FY20, before declining in FY21 due to the COVID-19 pandemic. As the underlying growth drivers such as services and agriculture are intact, the rural earning power has revived, as visible in exhibit 117. It can be further noticed that agriculture and services both are significant contributors to the state's rural economy, with shares of 25% and 37% in the state's rural output respectively.
- Pertaining to agriculture, we observe that the contribution of crop production has been declining steadily over the years (62% of agri output in FY12 to 46% in FY23) due to sustained divisions of fertile family agricultural land with family expansion. This decline has been counterbalanced by the meteoric rise of livestock in the state, which has risen at 17% CAGR in the last 11 years, as against 11% of the agricultural sector. This sub-segment has grown from being 26% of agri output contributors in FY12 to 46% in FY23.
- Furthermore, the services sector growth has been mainly led by "trade, hotels & restaurants" and "real estate & professional services", which accounted for 51% of incremental service GSDP addition between FY15 to FY20. These two sub-sectors grew at 12% and 10.6% CAGR in this time period.
- The key districts contributing to the rural state economy are Alwar, Jodhpur, Bhilwara and Ajmer. While Alwar is agri-focused and mineral-rich apart from being a tourism centre, Jodhpur is the handicraft hub of India. This also has a prospering tourism industry, which hosts domestic and foreign tourists in its heritage hotels. Further, Bhilwara has a developed textile industry and Ajmer thrives on an established tourism industry.

Exhibit 117: Real per capita income (INR) – Rajasthan

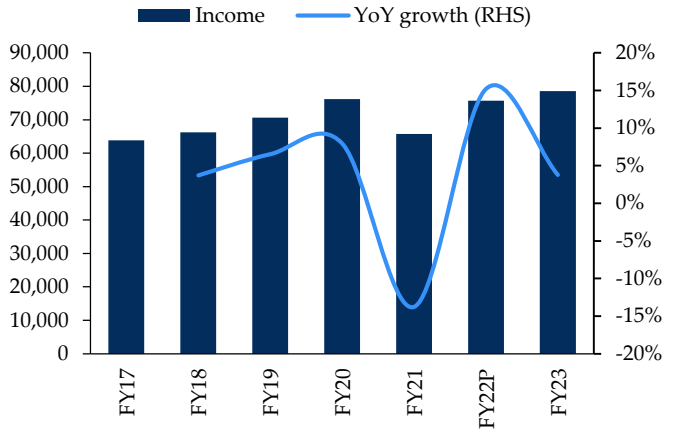
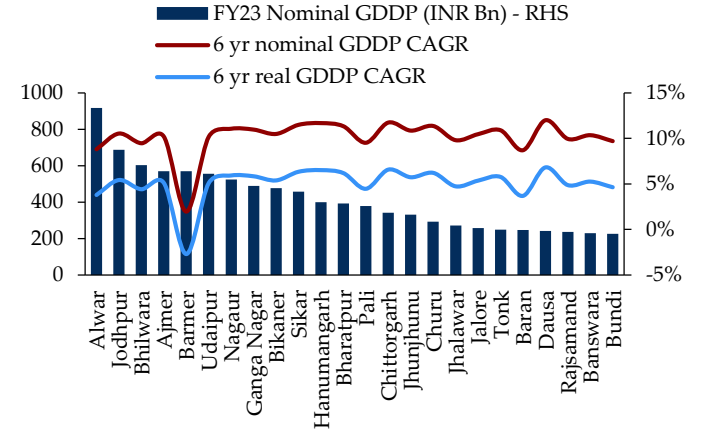


Exhibit 118: District wise GDDP – Rajasthan



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Uttar Pradesh (UP)

- The per capita real income of UP has been subdued in FY21 and FY22 due to the impact of the Covid-19 pandemic and unescapable rural inflation, which damaged the purchasing power of individuals. On the back of growth in the services sector, the earning power of individuals in rural UP has improved but is marginally behind its previous peak made in FY19. It is worth pondering that per capita real income of rural UP at INR 38,474 in FY23 was way lower than that of other southern states and the Indian average of INR 83,271. This can be attributed to a much larger rural population of UP (218 mn) as compared to other states and relatively slower GSDP growth between FY19-FY22.
- The leading drivers of economic growth of rural UP are agriculture and services, with contributions of 29% and 43% to rural output respectively. In recent years, due to the increased focus of the government, the industries segment has shown meaningful traction as well. Under the head of "agriculture", crop production is the main activity with a 68% contribution in FY22 while livestock adds ~24%. This composition has remained consistent over the last 10 years with minor dislocations. These subsectors have grown at a 9% CAGR in the last eight years, keeping the state's rural economy devoid of any major growth drivers.
- The services sector on the other hand has grown faster at 12% between FY15-FY20, supported by increasing participation and skill level of the young population of the state in the economy. The median age in UP is 24 years as against 28 overall in India. With the increase in skill level and employability, this pool of youth will drive the economic growth of the state. Within the services domain, "trade, hotels & restaurants", "real estate services" and "public administration" have driven the growth in the mentioned period growing in the 8-12% range.
- Leading districts helping the state economy grow are Agra, Allahabad, and Bareilly. Agra has a booming tourism industry thanks to "the Taj Mahal", apart from a flourishing leather and footwear industry. Furthermore, Allahabad and Bareilly mainly depend on agriculture apart from a growing real estate sector.

Exhibit 119: Real per capita income (INR) – Uttar Pradesh

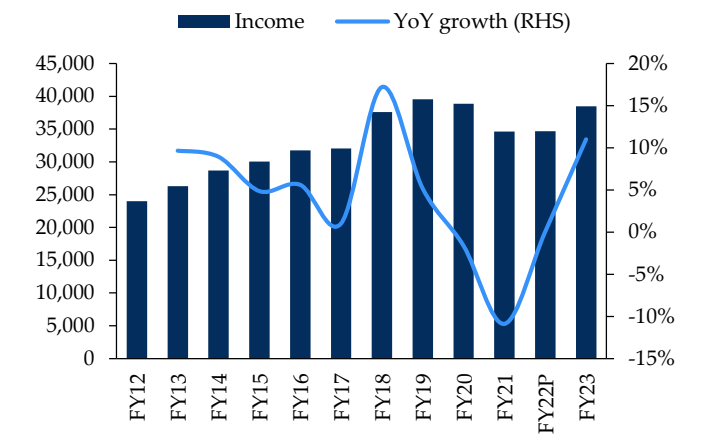
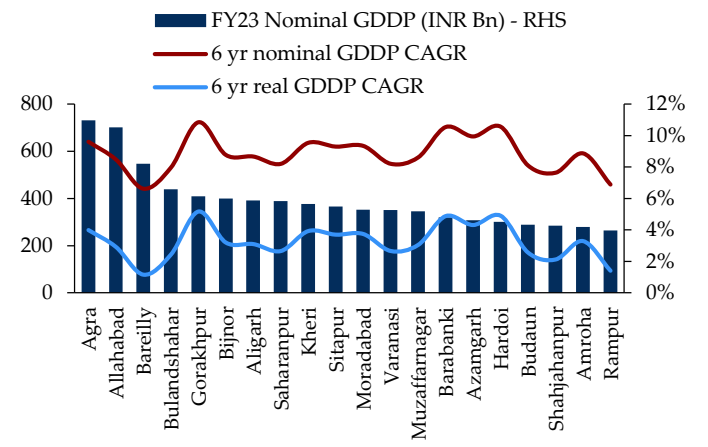


Exhibit 120: District wise GDDP – Uttar Pradesh



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Punjab

- The per capita real income of rural Punjab has grown at 3% CAGR in the last three years, post-Covid decline but still hasn't yet crossed its previous peak made in FY19 which was INR 102,263. In spite of this, the current per capita income of INR 98,277 is much higher than the country's average of INR 83,271. It can be noticed from the below chart that earning power of the individuals in the state hasn't grown at all between FY18-FY23. So, the reason behind the sluggish economy can't only be the COVID-19 pandemic as it only hit in the last month of FY20.
- Upon deep dive, we find that agriculture, which has been the mainstay of the state conventionally (41% of rural output share), has grown at a muted rate of 6.9% CAGR only in the last nine years. Further, crop production has grown at 4.7% CAGR, only marginally above the inflation rate of 3.9% CAGR in the same period. Real value addition from crops has been lower due to steady land division with family expansion in turn adversely impacting crop yield. This has been making crop production unviable for various smaller farmers and they are taking alternate occupations for livelihoods. However, livestock has been growing steadily over this period at 11% CAGR. This has grabbed share from crop production and now stands at 38%, as against 53% of crops.
- The services sector, which formed 33% of rural GSDP, has grown at an impressive 12% CAGR between FY16 and FY20. Subsectors "trade, hotels & restaurants" and "real estate" grew at 11.5% and 11.8% CAGR respectively in this period driving the state economy ahead. These two accounted for 42% of service sector GSDP addition in the study period.
- The key districts contributing to the rural economy are Firozpur, Sangrur and Patiala. Firozpur has an agrarian economy but the other three mentioned districts have a flourishing services industry driving them. While Sangrur has clusters of engineering workshops, cold storage, etc., apart from pervasive milk processing units, Patiala has a growing real estate and construction ecosystem.

Exhibit 121: Real per capita income (INR) – Punjab

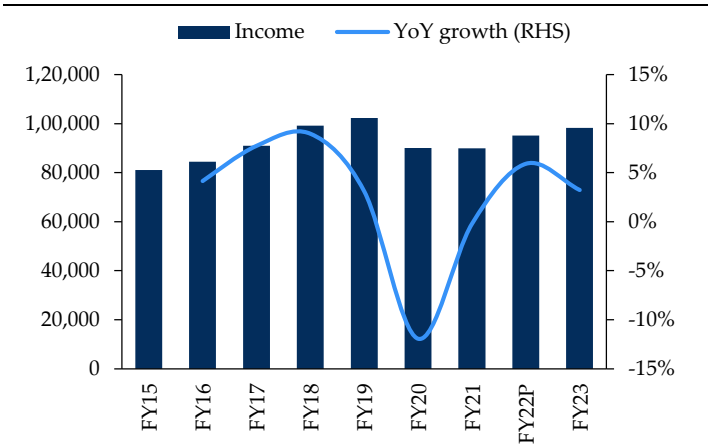
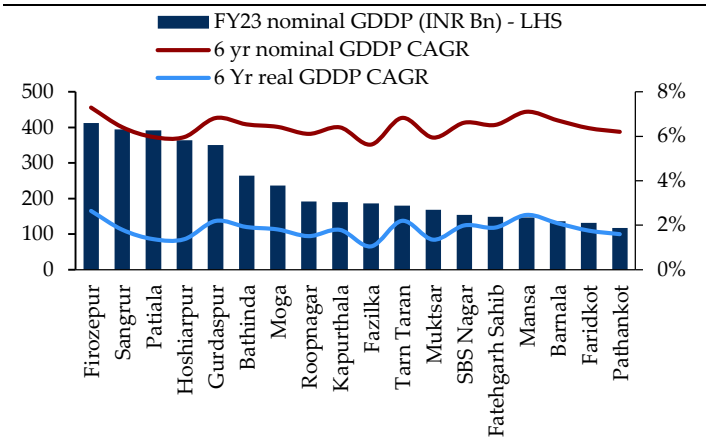


Exhibit 122: District wise GDDP – Punjab



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Kerala

- The per capita rural income for Kerala hasn't recovered completely post the Covid-led decline. Having mentioned this, it is important to highlight that between FY12 to FY20, this parameter has grown at a steady 7.8% CAGR. Furthermore, it should also be noted that in spite of not having recovered yet from the pandemic's woes, the current per capita income is still the highest in the country at INR 130,825 and much higher than the country's average of INR 83,271. This is led by healthy double-digit growth of the services sector over the past decade.

- Services contributed 57% of overall rural GSDP in FY23, making it the single biggest driver of economic growth in the state. This sector has witnessed 59% of its incremental GSDP addition between FY15 and FY20 from only two segments, namely "trade, hotel & restaurants" and "real estate & professional services". These two have grown at a strong 12% CAGR in the period under study. Other services which include tourism, medical services, IT, housekeeping and training also grew at a healthy 13% during this time.

- Agriculture, which is the other major economic force, contributed 23% to the state's rural GDP in FY23. Within agriculture, the sub-segment of crop production grew at a muted rate of only 2% CAGR in the last decade. As a result, its contribution towards agriculture output has declined steadily from 60% to 38% since FY12. This decline has been compensated by growth in livestock and fishing/aquaculture, which grew at 9% and 14% CAGR in the last decade vis-à-vis 7% of the agricultural sector. Also, output shares of livestock and aquaculture grew to 29% (+550 bps since FY12) and 16% (+780 bps since FY12) respectively.

- Key districts driving the state's financial progress are Malappuram, Kollam, and Palakkad. Malappuram is the largest rural district of Kerala, whose income significantly depends on emigrants, as 54% of its households are emigrant households. Most of these people work in the Middle East. Coconut, paddy and cashew are their agri-produce. Further, Kollam is an export-import trade centre due to the presence of a flourishing port and Palakkad—an industrial hub—due to its proximity to the industrialised district Coimbatore.

Exhibit 123: Real per capita income (INR) – Kerala

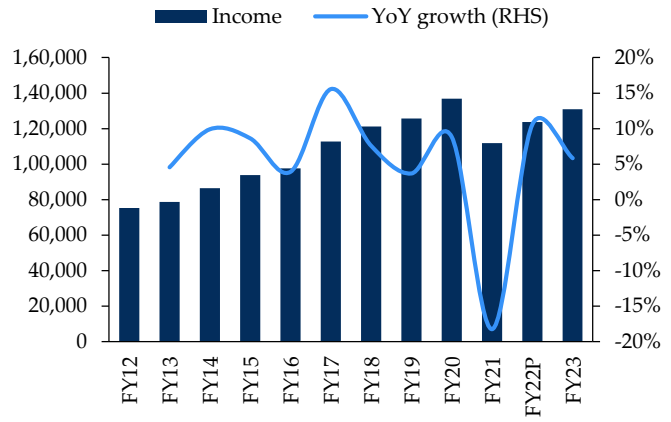
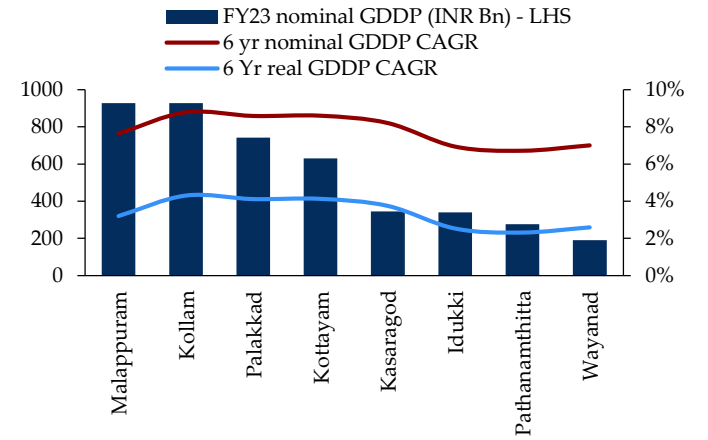


Exhibit 124: District wise GDDP – Kerala



Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Key takeaways:

Recovery of rural income per capita; where are the bright spots?

- Based upon the per capita income analysis, the seven states under study, namely Madhya Pradesh, Andhra Pradesh, Maharashtra, Rajasthan, Karnataka, Tamil Nadu and Telangana, have already witnessed rural income recovery. The other three states Uttar Pradesh, Punjab and Kerala are yet to recover.
- These seven recovered states account for 76.8% of the rural GDP of the sample under study but their rural population is only 60.9% of the overall rural population of the country. Hence, it can be clearly inferred that the most populous state Uttar Pradesh which has a very high rural percentage is skewing the overall distribution. Hence, the country's rural recovery hinges upon the recovery of the rural economy of Uttar Pradesh.
- While we have established that seven out of these 10 under-study states have already witnessed rural recovery, it's necessary to also analyse the distribution of population in the states that have recovered.
- The district-level population analysis as reflected in the below table suggests that almost the entire rural population of Madhya Pradesh, Andhra Pradesh, Karnataka and Tamil Nadu has recovered on the economic front. On the other hand, Uttar Pradesh which accounts for a third of the country's rural population is clearly yet to recover. Hence, the country's recovery isn't complete in a real sense until states like Uttar Pradesh show signs of economic recovery.
- Led by the sluggish performance of Uttar Pradesh, Punjab and Kerala, we conclude that only 58% of the Indian population has witnessed economic recovery post a slowdown in the last few years. 42% of the population of the country (mainly residing in Uttar Pradesh, Punjab, Kerala and Maharashtra) is still some time away from economic recovery.

Exhibit 125: State-wise summary of income per capita recovery

	Population (Mn)			% population recovered
	Recovered	Yet to recover	Rural Population	
Madhya Pradesh	67.6	0.0	67.6	100%
Andhra Pradesh	53.5	0.0	53.5	100%
Uttar Pradesh	0.0	218.1	218.1	0%
Maharashtra	73.9	9.3	83.2	89%
Rajasthan	63.1	6.5	69.6	91%
Karnataka	56.5	0.0	56.5	100%
Tamilnadu	42.3	0.0	42.3	100%
Telangana	22.4	4.8	27.2	82%
Punjab	0.0	22.3	22.3	0%
Kerala	4.3	12.3	16.6	26%
Overall India	383.5	273.3	656.8	58%

Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Key best and worst-performing districts apropos per capita income growth

In the tables below, we have listed down a few key districts with the highest as well as the lowest ranks in "per capita real income growth" over the last five years. It can be noticed that most of these high-growth districts are present in Madhya Pradesh and Karnataka where economic recovery has been the strongest. On the other hand, districts with the slowest growth come from Uttar Pradesh as the rural economy of the overall state has suffered from slow real growth in the last few years, impacted by slow nominal growth combined with high inflation levels.

Exhibit 126: High-growth districts

District	State	FY23 Population (in Mn)	Real per capita income (FY23)	5 Yr income CAGR	Dominant sector
Sheopur Kalan	Madhya Pradesh	0.7	1,01,805	13.5%	Agriculture
Kodagu	Karnataka	0.6	1,51,821	13.0%	Services
Sidhi	Madhya Pradesh	1.2	61,396	10.9%	Agriculture
Tikamgarh	Madhya Pradesh	1.6	72,036	10.5%	Agriculture
Jayashankar	Telangana	0.5	90,364	10.2%	Agriculture
Umaria	Madhya Pradesh	0.7	69,523	9.2%	Agriculture
Sehore	Madhya Pradesh	1.4	92,342	9.1%	Agriculture
Rewa	Madhya Pradesh	2.6	73,820	9.0%	Agriculture
Nagarkurnool	Telangana	1.0	1,09,693	8.8%	Agriculture
Jagtial	Telangana	1.1	1,05,003	8.7%	Industries

Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Exhibit 127: Slow growth districts

District	State	FY23 Population (in Mn)	Real per capita income (FY23)	5 Yr income CAGR	Dominant sector
Chitrakoot	Uttar Pradesh	1.1	32,401	-6.1%	Services
Sonebhadra	Uttar Pradesh	2.2	39,747	-4.6%	Services
Barmer	Rajasthan	3.0	88,679	-4.4%	Industries
Mahoba	Uttar Pradesh	1.0	57,148	-4.2%	Services
Kasganj	Uttar Pradesh	1.7	47,380	-2.3%	Agriculture
Bhadohi	Uttar Pradesh	1.8	89,137	-2.2%	Industries
Jalore	Rajasthan	2.1	56,961	-1.9%	Services
Baghpat	Uttar Pradesh	1.5	48,894	-1.9%	Agriculture
Unnao	Uttar Pradesh	3.6	35,346	-1.9%	Services
Rampur	Uttar Pradesh	2.7	48,605	-1.6%	Agriculture

Source: Economic survey of various states, DES of various states, Indiastat database, HSIE Research

Key conclusion: Based upon per capita income analysis, we observe that the rural economies of Uttar Pradesh, Punjab and Kerala are yet to recover completely. Except for the aforementioned states, all other under study states have witnessed their rural per capita real incomes surpassing their earlier peaks reflecting economic recovery. Having mentioned this, it is worth highlighting that ~42% of the country's rural population is still yet to reach its previous peak earning capability, led by Uttar Pradesh and Punjab. Therefore, a complete rural recovery in true sense can be proclaimed once the remaining population also reaches its previous peak earning levels.

Conclusion

State-wise rural economy scores

Throughout the previous sections of the report, we have done an in-depth analysis the various segments of the rural economy of key states. Exhibit 128 attempts to bring these aforementioned sections together to highlight the rural performance of each state. The methodology behind constructing the table is as follows:

- Sector scores have been assigned based on the bottom-up analysis done throughout the report for each state. Similarly, the real income per capita growth of the rural economies in each state have been indexed and scored.
- Naturally, a score of 0 is the lowest score and a score of 10 the highest.
- The final rural score in the last column is a weighted average score of the four individual scores.
- The sector scores have a cumulative weight of 80% which have been allocated based on the size of each sector's contribution to the state's rural GDP
- The real income per capita score has a weight of 20%.

Exhibit 128: State-wise rural economy scores

States	Contribution of sectors to state's rural GDP in FY23			Sector scores			Real Income per capita scores (FY18-23)	Weighted average rural score
	Agriculture	Industries	Services	Agriculture	Industries	Services		
Andhra Pradesh	43%	20%	37%	10.0	3.7	7.0	8.8	8.9
Karnataka	22%	31%	46%	7.1	4.4	7.9	7.2	7.4
Kerala	23%	20%	57%	0.0	0.0	6.8	2.6	3.6
Madhya Pradesh	52%	23%	25%	9.3	2.4	3.8	10.0	8.2
Maharashtra	25%	33%	43%	5.8	3.2	6.8	2.9	5.4
Punjab	41%	26%	33%	3.1	0.6	4.5	0.0	2.6
Rajasthan	35%	28%	37%	6.7	6.1	5.7	5.7	6.9
Tamil Nadu	18%	34%	48%	6.3	10.0	6.3	6.3	8.2
Uttar Pradesh	29%	27%	43%	4.9	0.9	4.9	1.1	3.6

- **The states where the rural economy has been performing well and is expected to continue doing so are Andhra Pradesh, Karnataka, Madhya Pradesh, and Tamil Nadu.**
- Maharashtra and Rajasthan's rural economies still have room to improve going forward.
- The states with relatively poor rural performance have been Kerala, Punjab, and Uttar Pradesh.

State-wise business presence of select HSIE coverage universe companies

Now that we have established the state-wise rural economy performance, we can assess the companies that are more likely to see an improvement in business form rural geographies going forward. We have chosen consumer facing industries and analysed key geographic metrics of the HSIE under coverage companies in those industries. The industries we have chosen are consumer discretionary, consumer staples, automobiles, and lending financials.

Exhibit 129: State-wise business presence of select HSIE coverage universe companies

		State-wise business presence									
Company	Metric used	Andhra Pradesh	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	Others
Avenue Supermart	Outlets	9%	9%		6%	31%	3%	4%	6%		33%
Trent	Outlets	3%	11%	4%	4%	17%	2%	3%	7%	7%	42%
Relaxo Footwears	Outlets				7%	3%	13%	7%		26%	44%
V-Mart	Outlets	3%	4%	0%	4%	1%	1%	5%	6%	31%	43%
Bata India	Outlets	3%	13%	6%	3%	11%	3%	3%	10%	9%	39%
Eicher Motors Ltd	Revenue contribution	5%	5%	9%		9%	6%	3%	9%	11%	43%
Maruti Suzuki India Ltd	Revenue contribution		6%	7%		11%	3%	6%	6%	9%	52%
Bajaj Auto Ltd	Revenue contribution	9%	6%		7%	7%	3%	4%	11%	12%	41%
Ashok Leyland	Revenue contribution	5%	6%		3%	14%		7%	12%	6%	47%
TVS	Revenue contribution	4%	8%	9%	5%	10%	3%	5%	13%	13%	32%
Cholamandalam Investment	Revenue contribution	5%	6%	4%	6%	11%	1%	7%	9%	7%	44%
M&M Financial	Outlets	4%	5%	5%	10%	8%	3%	8%	5%	11%	41%
REPCO Home	Sales	6%	13%	3%		9%			57%		12%
Shriram Finance	Sales	10%	9%	1%	3%	16%	3%	5%	23%		30%
CREDAG	Loan Book		33%		9%	21%			20%		17%
Sundram finance	Branches	7%	6%	7%	7%	5%	2%	6%	12%	0%	48%
Can fin Homes	Branches	9%	22%	3%	4%	6%	0%	5%	16%	5%	30%
City Union Bank	Total business	5%	6%	2%		2%			74%		11%
DCB Bank	Branches	5%	6%		8%	16%	5%		4%	5%	51%
Karur Vysya Bank	Branches	16%	6%	3%	1%	3%	1%	0%	54%	1%	16%
Ujjivan small finance bank	Branches		13%	3%	2%	7%	3%	5%	13%	7%	48%
Federal bank	Branches	2%	8%	44%	1%	8%	2%	1%	15%	2%	18%

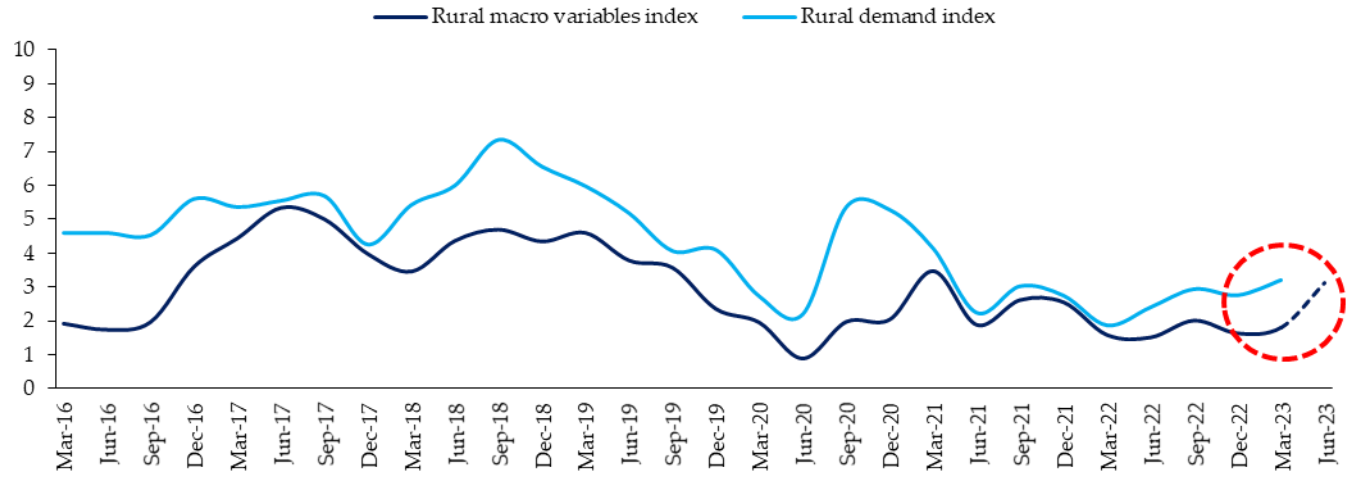
Based on our analysis of state-wise rural economic performance, and the company specific geographic presence, we assess that the following companies are largely present in well performing rural regions and are potential beneficiaries of region specific rural recovery:

- Automobiles:
  - TVS
  - Ashok Leyland
  - Bajaj Auto
- Consumer Discretionary:
  - Avenue Supermart
  - Trent
  - Bata India
- Lending Financials:
  - Cholamandalam Investment
  - M&M Financial
  - REPCO Home
  - Shriram Finance
  - CREDAG
  - Can fin homes
  - City Union Bank
  - Karur Vyasa Bank

HSIE rural demand index

We have developed our proprietary rural demand index to track rural consumption on a quarterly basis at a pan-India level. The model uses two indices; a rural macro variable index and a rural demand index. The variables index uses data points that are indicators of rural income and purchasing power. The rural demand index in-turn uses data points that help reflect the state of rural consumption.

Exhibit 130: HSIE rural demand index; an improvement in macro variables to continue driving rural demand recovery



Source: CMIE, MoSPI, HSIE Research

- The indices are scored from 0 to 10, with 0 being the worst economic performance and 10 being the best.
- The index shows a range bound score for both the variables and demand index since the second wave of the COVID-19 pandemic. However, our model suggests an improvement in rural macro variables in Q1FY24, primarily led be easing rural inflation. We expect rural consumption to follow suit and continue on its recovery path henceforth.

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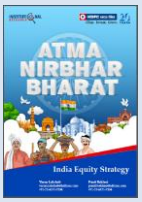

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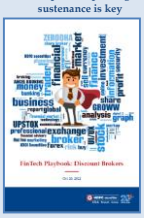

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Disclosure:
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