

Industry assessment

The tyre and treads industry in India

Tolins Tyres

August 2024

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1. Macroeconomic overview of global economy

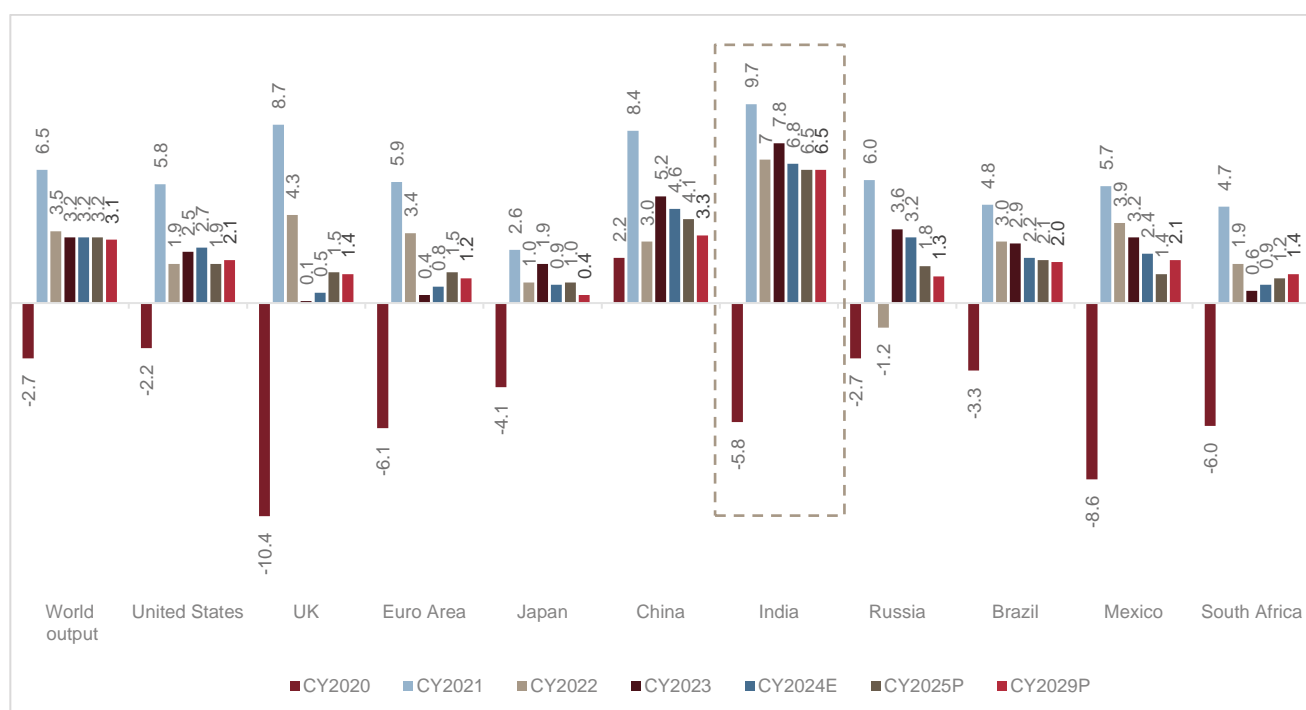
Overview of global economy

Review and outlook of global GDP

The global economy continues to recover from challenges heaped by the Covid-19 pandemic, geopolitical uncertainties in Europe and the Middle East, and considerable tightening of global monetary conditions to address elevated inflation. In fact, a return to the pre-pandemic growth rate was challenging, particularly in the case of emerging and developing economies, owing to the convergence of factors such as long-term fallout of the pandemic and increasing geoeconomic fragmentation. Other issues include elevated central bank policy rates in several emerging and developed economies to control inflation and withdrawal of fiscal support amid high debt levels, and extreme weather events.

Despite these challenges, the Indian economy saw strong growth momentum, with a major push fueled by investments and sectors such as information technology, services, agriculture and manufacturing.

Nominal GDP growth of key economies



CY – calendar year

Note: Euro area comprises 19 member countries of the EU

Source: International Monetary Fund (IMF; World Economic Outlook – April 2024 update), CRISIL MI&A Consulting

As per the International Monetary Fund's (IMF) World Economic Outlook:

- The global real GDP growth is estimated at 3.2% in the CY2024 with the forecast 0.1% higher than the previous estimates due to the upgrades for China, the United States (US), large emerging markets and developing economies. The forecast for CY2024 is however, below the historical (CY2000-2019) annual average of 3.8% due to elevated central bank policy rates to fight inflation, a withdrawal of fiscal support by major economies amid high debt weighing on economic activity and low underlying productivity growth.

- In the case of advanced economies which include the US, Japan and Euro area, growth is projected to rise from 1.6% in CY2023 to 1.7% in CY2024. A marginal upward revision of 0.2% for CY2024 compared with previous estimates of 1.5% is due to stronger growth momentum in the US that is partly offset by weaker growth in the Euro area.
- The growth rate in emerging market and developing economies which include China, India, Russia, Brazil, Mexico, and South Africa is expected to remain at 4.2% in CY2024, with a moderation in emerging and developing Asian countries such as India and China's growth offset mainly by rising growth for economies in Middle East, Central Asia and Sub-Saharan Africa. Emerging and developing economies are expected to experience stable growth through CY2024 and CY2025 albeit with some regional differences.

The real GDP growth rate of the US was revised down from 2.5% in CY2023 to 2.1% in CY2024. There was an upward revision of 0.6% for CY2024 from the previous estimates, largely due to stronger than expected growth outcome for 2023.

Growth for the Euro area is projected to recover from its low rate of an estimated 0.4% in CY2023 which was due to high exposure to the war in Ukraine, to 0.8% in CY2024. Stronger household consumption due to the decrease in energy prices and drop in inflation is supporting real income growth and is expected to drive the recovery. Growth for CY2024 is revised downward from the previous estimates, largely on account of carryover from the weaker than expected outcome for CY2023.

Among other advanced economies, growth in the United Kingdom is projected to rise modestly from an estimated 0.1% in CY2023 to 0.5% in CY2024, due to the lagged negative effect of high energy prices. Growth in Japan is projected to slow from an estimated 1.9% in CY2023 to 0.9% in CY2024. This is due to fading of the one-off factors that supported growth in 2023, including surge in inbound tourism, depreciation of the Yen, pent up demand, and a recovery in business investment following earlier delays in implementing projects.

Growth in emerging and developing countries of Asia is expected to decline from an estimated 5.6% in CY2023 to 5.2% in CY2024. Growth in China is projected at 4.6% in CY2024 due to carryover from stronger than expected growth of 5.2% in CY2023 and increased government spending on capacity building against natural disasters. India is the fifth largest economy and among the fastest growing major economies. Growth in India is projected to remain strong at 6.8% in CY2024 and 6.5% for CY2025 with the strong growth led by continuing strength in domestic demand and a rising working age population.

Economic activity in major developed countries was also resilient, with economic momentum continuing in the US and the Euro area avoiding a contraction in the fourth quarter of CY2023. Growth picked up in the fourth quarter of CY2023 in China as well. However, the slowdown in the UK economy accelerated in the fourth quarter of 2023, with a recession now being recorded. Japan's economy too slowed down in the fourth quarter of CY2023.

Meanwhile, the global headline inflation is expected to fall from an average of 6.8% in CY2023 to 5.9% in CY2024 mainly due to expected decline in inflation in advanced economies by 2% in CY 2024. The fall in global inflation in CY2024 reflects a broad-based decline in global core inflation (all item except food and energy). This dynamic differs from that in CY2023, when global core inflation fell marginally on an annual average basis and headline inflation declined mainly on account of lower fuel and food price inflation. In CY2024, core inflation is expected to fall by 1.2% after contracting by 0.2% in CY2023. As in case of headline inflation, the fall in core inflation is faster for advanced economies. Diminished inflation reflects the fading of relative price shocks, notably in energy prices. In near term, inflation expectations have fallen in major economies with long term expectations remaining anchored.

GDP growth (quarter-on-quarter seasonally adjusted, %)

	Q2-2022	Q3-2022	Q4-2022	Q1-2023	Q2-2023	Q3-2203	Q4-2023	Q1-2024
US	(0.6)	2.7	2.6	2.2	2.1	4.9	3.4	1.4
UK	0.1	(0.1)	0.1	0.2	0.0	(0.1)	(0.3)	0.6
Euro area	0.8	0.5	0.0	0.0	0.1	(0.1)	0.0	0.3
Japan	1.2	(0.2)	0.3	1.1	1.0	(0.9)	0.1	(0.5)
China	-2.1	4.0	0.8	1.8	0.5	1.8	1.2	1.6
India*	12.8	5.5	4.3	6.2	8.2	8.1	8.6	7.8

*Note: Year-on-year annualized per cent for India

Source: Statistical Bureau, respective countries

1.1. Review and outlook of inflation in key economies

Meanwhile, inflation has declined faster than expected. Global headline inflation is expected to fall to 5.9 percent in 2024 and to 4.5 percent in 2025, with the 2025 forecast revised down as per IMF estimate. The global economy has been surprisingly resilient, despite significant central bank interest rate hikes to restore price stability.

However, there is regional divergence on inflation in the US. S&P Global Ratings, in its June,2024 release, expects inflation data is now on track to reach the Fed's 2% target in late 2025 and with more evidence of a cooling job market and decelerating consumer spending growth, thus anticipating a rate cut in September 2024. Also, the European Central Bank is growing increasingly confident that euro zone inflation can drop to its 2% target by the middle of 2025. In China, June 2024 reading marked the lowest inflation rate since March 2024 and undershot market expectations.

Consumer price inflation (on-year, %)

	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2204	Feb-2024	Mar-2024	Apr-2024	May-2024	June-2024
US	3.7	3.2	3.1	3.4	3.1	3.2	3.5	3.4	3.3	3.0
UK	6.7	4.6	3.9	4.0	4.0	3.4	3.2	2.3	2.0	2.0
Euro zone	4.3	2.9	2.4	2.9	2.8	2.6	2.4	2.4	2.6	2.5
Japan	3.0	3.3	2.8	2.6	2.2	2.8	2.6	2.5	2.8	NA
China	0.0	(0.2)	(0.5)	(0.3)	(0.8)	0.7	0.1	0.3	0.3	0.2
India	5.0	4.8	5.5	5.6	5.1	5.1	4.9	4.8	4.8	5.1

Source: Statistical Bureau, respective countries

US inflation inches up while unemployment decreases

- According to a Bureau of Economic Analysis (BEA), US GDP grew at 1.4% in the first quarter of CY2024, lower than 3.4% in the previous quarter. Compared to the fourth quarter, the deceleration in real GDP primarily reflected decelerations in consumer spending, exports, and state and local government spending, and a downturn in federal government spending. These movements were partly offset by an acceleration in residential fixed investment and accelerated imports.
- Total nonfarm payroll employment increased by 206,000 in June 2024, and the unemployment rate changed slightly at 4.1 percent for the same period. Job gains occurred in government, health care, social assistance, and construction.
- The consumer price index, a broad measure of costs for goods and services across the U.S. economy, declined 0.1% from May 2024, putting the 12-month rate at 3% for June 2024, around its lowest level in more than three

years. The index for gasoline fell 3.8 percent in June 2024, after declining 3.6 percent in May 2024, more than offsetting an increase in shelter. The energy index fell 2.0 percent over the month, as it did the preceding month. The index for food increased 0.2 percent in June 2024.

- Goods and services trade deficit widened to USD 75.1 billion (seasonally adjusted) in May 2024, compared with USD 74.5 billion in April 2024. May 2024 exports were \$261.7 billion, \$1.8 billion less than April 2024 exports, whereas imports were \$336.7 billion in May 2024, \$1.2 billion less than April 2024 imports.

Economic activity revives in the Euro area, inflation eases

- In the first quarter of 2024, seasonally adjusted GDP increased by 0.3% in both the euro area and the EU, compared with the previous quarter, according to a flash estimate published by Eurostat, the statistical office of the European Union. In the fourth quarter of 2023, GDP had declined by 0.1% in the euro area and had remained stable in the EU.
- The seasonally adjusted HCOB Eurozone Composite PMI Output Index - a weighted average of the HCOB Manufacturing PMI Output Index and the HCOB Services PMI Business Activity Index - saw its recent upward trend thwarted at the end of the second quarter as it decreased for the first time since October last year. Posting 50.9 in June 2024, the headline index posted above the 50.0 no-change mark for a fourth month in a row, signaling a sustained increase in euro area business activity. That said, the latest figure fell from 52.2 in May 2024, thereby indicating a slowdown in the expansion, and signaled a rise in output that was the softest in three months and only marginal overall.
- According to the flash estimate from Eurostat, inflation in the Euro area eased to 2.5% in June 2024 from 2.6% in May 2024, driven by moderation across most categories. Looking at the main components of euro area inflation, services is expected to have the highest annual rate in June (4.1% in June 2024, stable compared with May 2024), followed by food, alcohol & tobacco (2.5% in June 2024, compared with 2.6% in May 2024), non-energy industrial goods (0.7% in June 2024, stable compared with May 2024) and energy (0.2% in June 2024, compared with 0.3% in May 2024).
- The Governing Council decided to lower the three key ECB interest rates by 25 basis points. Accordingly, the interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility will be decreased to 4.25%, 4.50% and 3.75% respectively, with effect from 12 June 2024.
- The euro area exports of goods to the rest of the world in May 2024 were €241.5 billion, a decrease of 0.5% compared with May 2023 (€242.7 bn). Imports from the rest of the world stood at €227.6 bn in May 2024, a fall of 6.4% compared with May 2023 (€243.2 bn).

UK manufacturing begins to expand; inflation expands

- The seasonally adjusted S&P Global UK Manufacturing Purchasing Managers' Index (PMI) registered 50.9 in June 2024, down slightly from May 2024's 22-month high of 51.2 and below the earlier flash estimate of 51.4. The PMI has posted above the neutral 50.0 mark - signalling expansion in each of the past two months. Three out of the five PMI components were at levels consistent with improved operating conditions in June, as output and new orders expanded and suppliers' delivery times lengthened. In contrast, stocks of purchases and employment both decreased.
- UK gross domestic product (GDP) is estimated to have increased by 0.6% in Quarter 1 (Jan to Mar) 2024, following declines of 0.3% in Quarter 4 (Oct to Dec) and 0.1% in Quarter 3 (July to Sept) 2023. Compared with the same quarter a year ago, GDP is estimated to have increased by 0.2% in Quarter 1 2024. In output terms, services grew by 0.7% in Q1 2024 with widespread growth across the sector; elsewhere the production sector grew by 0.8% while the construction sector fell by 0.9% in the same period. In expenditure terms, there were increases in the volume of net trade, household spending and government spending, partially offset by falls in gross capital formation.

- The Consumer Prices Index (CPI) rose by 2.0% in the 12 months to June 2024, the same rate as the 12 months to May 2024. The largest upward contribution to the monthly change in CPI annual rates came from restaurants and hotels, where prices of hotels rose more than a year ago; the largest downward contribution came from clothing and footwear, with prices of garments falling this year having risen a year ago. Core CPI (excluding energy, food, alcohol and tobacco) rose by 3.5% in the 12 months to June 2024, the same rate as in May; the CPI goods annual rate fell from negative 1.3% to negative 1.4%, while the CPI services annual rate remained at 5.7%.
- Goods and services trade deficit widened by GBP 1.6 billion (seasonally adjusted) in May 2024 to GBP 9.2 billion driven by increased imports and decreased exports of goods.

Inflation accelerates in Japan

- Japan's GDP shrank 0.5% qoq in Q1 of 2024, matching flash data while reversing from an upwardly revised 0.1% growth in Q4. Private consumption, which accounts for more than half of the economy, fell for the fourth straight quarter (-0.7%, in line with the initial reading and market consensus, after a 0.4% drop in Q4), marking the steepest fall in 3 quarters as consumers continued to reduce their spending in the face of expensive costs of living and sluggish wages.
- Posting at the neutral mark of 50.0 in June 2024, the au Jibun Bank Japan Manufacturing Purchasing Managers' Index (PMI) – a composite single-figure indicator of manufacturing performance, indicated no change in the overall health of the sector. This followed a marginal improvement in operating conditions in May 2024, when the headline figure registered 50.4.
- The annual inflation rate in Japan accelerated to 2.8% in May 2024 from 2.5% in April 2024, pointing to the highest reading since February 2024. There was a steep upswing in electricity prices as energy subsidies fully ended (14.7% May 2024 vs -1.1% in April 2024), reversing declines in the prior 15 months. At the same time, prices rose further for food (4.1% May 2024 vs 4.3% April 2024). The core consumer price index in Japan, which excludes fresh food but includes fuel costs, increased by 2.5% year-on-year in May 2024, picking up from April 2024's 3-month low of 2.2% and marking the first rise since February amid a sharp jump in energy prices, notably electricity as the government fully removed subsidies.
- The central bank policy rate in Japan stood at 0.05 percent in June 2024. In March 2024 the Bank of Japan raised short-term interest rates for the first time in 17 years, ending its negative interest rate policy. From March 21, 2024 onwards, the Bank of Japan encourages the uncollateralized overnight call rate to remain between 0.0 and 0.1 percent.
- Japan's trade deficit decreased to JPY 1,221 billion in May 2024 from JPY 1,382 billion in the same month of the prior year, compared with market estimates of a JPY 1,300 billion shortfall. It was the second straight month of a trade gap, despite exports growing faster than imports. Outbound shipments jumped by 13.5% yoy, the sixth consecutive month of growth, beating forecasts of 13% and marking the strongest increase since November 2022, to JPY 8,276.63 billion, supported by robust sales to main trading partners, notably the US and China. Inbound shipments expanded 9.5%, the second successive month of rise and the strongest growth in 16 months, to a five-month peak of JPY 9,497.93 billion, due to higher purchases of mineral fuels.

Manufacturing remains stable in China

- China Q1 2024 GDP growth. China's GDP in the first quarter of 2024 reached RMB 29.63 trillion (US\$4.1 trillion) according to preliminary calculations. This is an increase of 5.3 percent from the previous year and an increase of 1.6 percent from the previous quarter when calculated at constant prices.
- The official National Bureau of Statistics (NBS) Manufacturing Purchasing Managers' Index stood at 49.5 in June 2024 unchanged from the previous month, indicating that the climate level of manufacturing industry was basically stable. In terms of enterprise size, the PMI for large enterprises was 50.1 percent in June 2024, a

decrease of 0.6 percentage point from the previous month; the PMI for medium-sized and small enterprises was 49.8 and 47.4 percent respectively in June 2024, an increase of 0.4 and 0.7 percentage points from the previous month.

- Consumer inflation dropped to 0.2% in June 2024 from 0.3% in May 2024. June's reading marked the lowest inflation rate since March and undershot market expectations. Looking at subsectors, higher non-food prices outweighed lower food prices. Factors such as muted domestic demand, a weak housing market, massive domestic manufacturing capacity, and elevated competitive pressures in sectors such as electric vehicles have all contributed to keeping inflation low in recent months.
- China's trade surplus surged to USD 99.05 billion in June 2024, up from USD 69.80 billion a year earlier. Exports jumped 8.6%, the fastest in 15 months, while imports fell 2.3%. For the first half of 2024, China recorded a USD 435 billion surplus, with exports rising 3.6% to USD 1.71 trillion and imports growing 2.0% to USD 1.27 trillion.

India to post the fastest growth among large economies

- India's growth trajectory continued throughout fiscal 2024 wherein India's real GDP expanded at 7.8% in the first quarter of 2024, 7.6% in the second quarter and 8.4% in the third quarter. On the supply side, gross value added (GVA) growth at 6.3% in the first quarter of 2024 was much lower than the GDP growth in the fourth quarter. A strong growth in net taxes pushed the GDP growth higher than GVA.
- Inflation based on the Consumer Price Index (CPI) surged in June 2024, corroborating the central bank's position that the last mile of disinflation remains a challenge. The gauge printed at 5.1% for June 2024, compared with 4.8% in May 2024 as food prices remained high. Notwithstanding a supportive base effect from last year, food inflation surged to 9.4% in June 2024 on account of pricier vegetables, cereals, milk and fruits. Vegetables inflation, which has remained in double-digits for eight months now, is a major worry as is rigidity in foodgrains inflation. Non-food inflation eased for the 17th straight month, sliding to a record low of 2.3%.
- The Reserve Bank of India kept its benchmark policy repo at 6.5% for the eighth consecutive meeting in June 2024, as widely expected amid persistent price pressures and remaining economy resilient. The latest move came after annual inflation stood at 4.85% in April 2024, almost unchanged from March, staying within the RBI's 2-6% target range in the medium term.
- India recorded a trade deficit of \$20.98 billion in June 2024, \$1 billion more than the deficit recorded in June 2023, even as merchandise exports rose 2.56% year-on-year to reach \$35.2 billion during the month.
- As per CRISIL MI&A, India's economy is expected to grow at 6.8% in fiscal 2025 up from 6.5% projected earlier. This will be driven by expected easing of domestic financial conditions, disinflation leading to increasing purchasing power of consumers and growth in private capital expenditure.

Geopolitical pressures amid steady supply to keep Crude oil prices ~\$83-88 per bbl in 2024

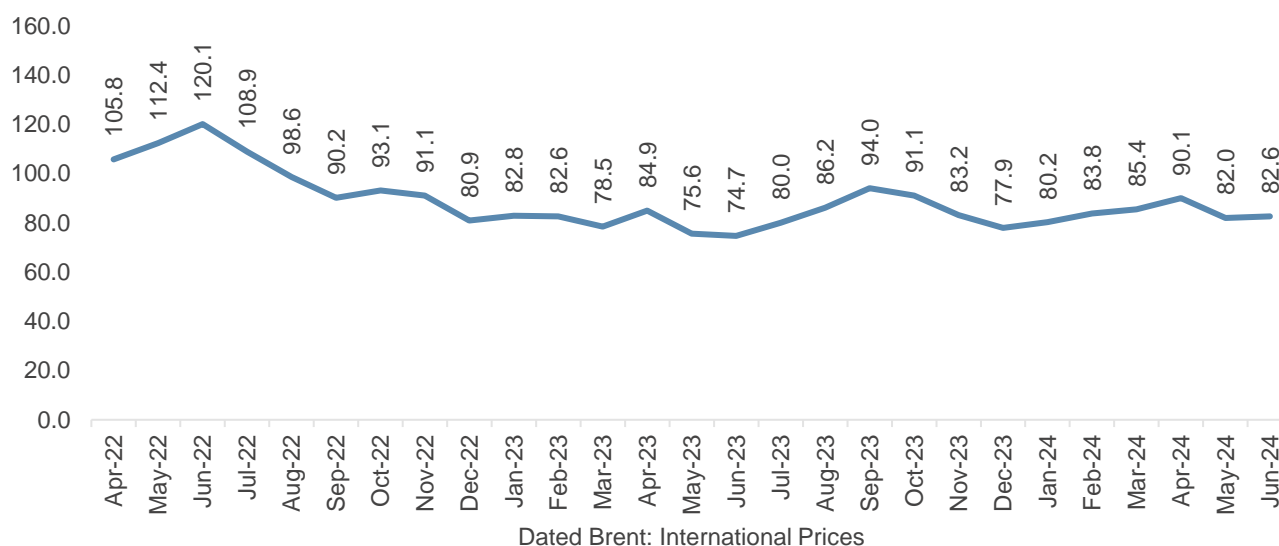
In 2023, Crude oil prices witnessed a steady decline of 18% on-year supported by easing of geopolitical tensions coupled with recessionary pressures globally. In H1 2023 crude oil prices averaged \$80 per barrel resulting in a decline of ~25% on-year owing to deterioration in economic conditions globally such as banking crises in US and lower than anticipated Chinese demand revival. The decision of the OPEC+ in April-23 to cut 1.16 mbpd of output coupled with summer demand from the US resulted in overall prices to surge in H2 2023. Tight global supply resulted in declining inventories pushed prices upwards in Q3 2023. The deteriorating demand scenario stemming from Europe and Japan along with easing of Venezuelan oil sanctions global oil prices.

Moderating demand coupled with steady global supply are expected to keep crude oil prices to remain range bound in 2024. CRISIL MI&A Research expects overall crude oil prices to average around \$83-88 per bbl in 2024.

However, the recent issues pertaining to the shipping along with the OPEC+ production strategy will be key monitorable driving prices in the current year.

On the demand front, total world oil demand grew by a healthy 1-2 million barrels per day (mbpd), reaching 98-99 mbpd in 2023. Driven by healthy growth in key consuming economies such as the United States (US), Europe, Middle East, and India.

Brent Crude prices (\$/barrel)



Sources: CRISIL MI&A Consulting

Global trade stabilises

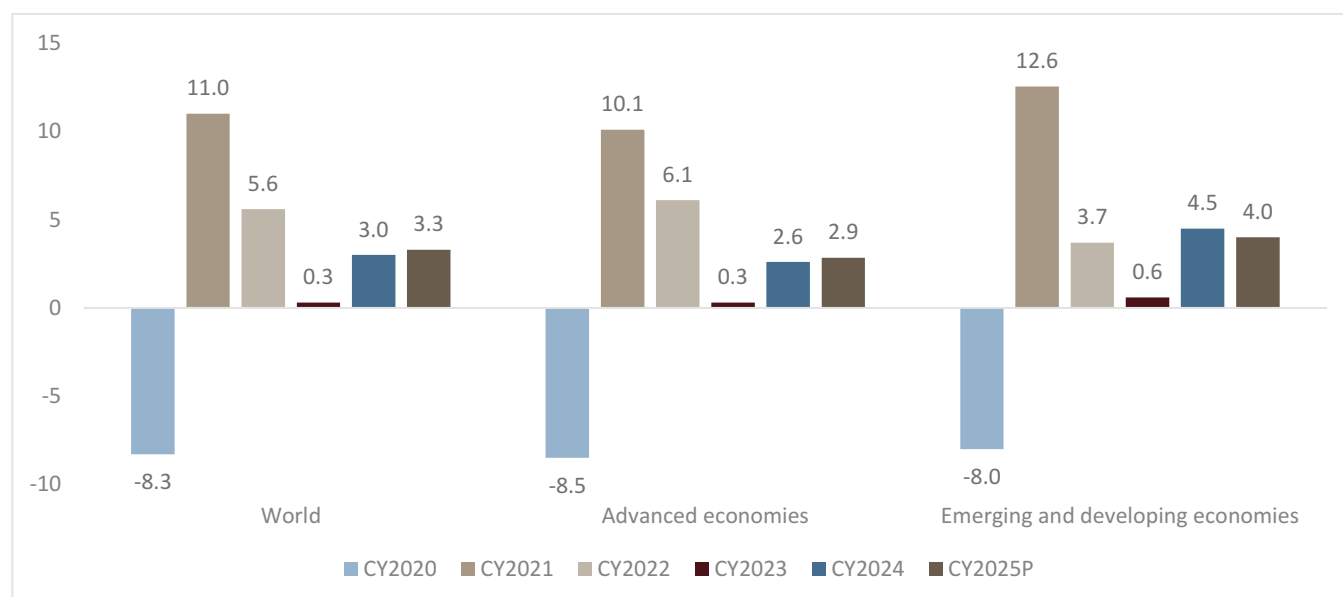
The value of global merchandise trade has continuously declined since mid-2022. The decline in 2023 was primarily because of lower demand in developed countries and subdued trade in East Asia and Latin America. Lower commodity prices further contributed to lowering the value of international trade during the year.

In contrast, trade in services has sustained growth throughout most of the period. Among services, tourism and travel related services rebounded strongly.

In volume terms, trade was modest through 2023. The slightly positive trend in the volume suggests resilient global demand for imported products. A weak US dollar also supported global trade volume in 2023.

However, on-quarter merchandise as well as services trade have stabilised. In 2024, global trade is projected to grow 3.3% on account of overall moderating global inflation and sustained growth of economies. That said, persistent geopolitical uncertainties and rising shipping costs, and high levels of debt weighing on economic activity in many countries may negatively impact further improvement in global trade.

IMF world trade growth projection



Advanced economies – US, Japan, Euro area; emerging market and developing economies – China, India, Russia, Brazil, Mexico, South Africa

Note: Average annual % change of export and import trade in goods and services has been considered

Source: IMF (World Economic Outlook – April 2024 update), CRISIL MI&A

1.2. Key events and their impact on global trade

Uncertainty in the Middle East

In the past few months, global trade has been affected by geopolitical uncertainty in the Middle East, leading to an increase in delivery times, and, thereby, disrupting supply chains. Also, a severe drought in the region of the Panama Canal has forced authorities to impose restrictions that have substantially reduced daily ship crossings, slowing down maritime trade through this key conduit, which typically accounts for 5% of global maritime trade. In the first two months of 2024, trade through the Suez Canal fell 50% from a year earlier and trade through the Panama Canal fell 32%.

Commodity price spikes amid geopolitical and weather shocks

The geopolitical uncertainty in the Middle East region, which accounts for ~35% of the world's crude oil exports and 14% of natural gas exports, could affect a wider region in case of further uncertainty. Geopolitical uncertainties in Europe are also leading to fresh supply shocks, with food, energy and transportation costs spiking. In fact, container freight cost increased sharply between October 2023 and January 2024. Geoeconomic fragmentation could also constrain cross-border flow of commodities, causing additional price volatility. Extreme weather shocks, including floods and droughts, may lead to an increase in food prices as well, putting risk to global disinflation.

Tighter monetary policies

A slower-than-expected decline in core inflation in major economies, owing to persistent labour market tightness and supply chain disruptions, could impact interest rates and asset prices, thereby increasing financial stability risks, tighten global financial conditions, and strengthen the US dollar, with adverse consequence for trade and growth.

Key global central banks raised rates in quick succession in 2023, as several advanced economies confronted elevated inflation.

In the current cycle, the Fed and the Bank of England have each raised rates by 525 bps, while the European Central Bank has raised rates by 450 bps. In the past few months, however, these central banks have held interest rates steady as inflation moves closer to the targets. To be sure, the Fed has indicated that it will cut rates by a cumulative 75 bps in 2024.

Growth faltering in China

With a substantial share of several economies' exports absorbed by China, a weaker-than-expected economic recovery in China would have significant cross-border implications, especially for commodity exporters. Fixed investment has already weakened, indicating weakness in external demand. Unintended fiscal tightening in response to local government financing constraints is also possible, which will reduce household consumption as well. Risks to the outlook also include ongoing weakness in the Chinese real estate market, which could pose a larger-than-expected drag on growth and potentially lead to financial stability risks.

India-US trade

The US had communicated in August 2021 to India that it was not interested in a free trade agreement (FTA). India was pulled out of the US's Generalised System of Preferences that granted some tariff relief to its exports in 2019.

The government will now have to work on market access issues on both sides, lowering of non-tariff barriers, entering into mutual recognition pacts and adopting common quality standards, which could help Indian exports in the interim. There is even the possibility of providing domestic access to US agricultural products or easing import duties on automobiles, etc.

That said, the strong momentum in the India-US trade in goods and services has continued, with trade likely to have surpassed \$200 billion in 2023 despite the challenging global trade environment. This is almost doubled the level in 2014, showcasing the benefits to both countries, highlighted in the latest India-United States Trade Policy Forum in January 2024.

Beyond trade, India and the US have strong ties in various policy areas. The countries regularly collaborate on initiatives such as the Indo-Pacific Economic Framework for Prosperity (IPEF). The two nations have also resolved seven disputes at the World Trade Organization (WTO), underlining deepening cooperation.

Trade deficit narrows

The global economy is set to broadly expand at a steady pace in 2024. As per the IMF's World Economic Outlook January 2024 projection, the global economy will grow 3.3% in 2024 and 3.6% for 2025.

In 2023, major economies saw a downturn in merchandise trade, with Russia the notable exception, which saw imports rise 6%. However, this increase could be because of currency fluctuation on a very low base of 2022. In fact, Russian exports sharply declined during the year, largely tied to the energy markets. On the other hand, Brazil and the EU eked out growth.

On-quarter data, though, indicates a return to growth in some major economies, including China and India. Overall, a comparison of annual and quarterly trajectories suggest significant improvement in trends for several economies; however, at an overall level, the data still pointed to a negative for 2023.

The decline in global trade was more pronounced for developing countries. In 2023, imports and exports of developing countries declined 5% and 7%, respectively. Conversely, imports in developed countries decreased ~4% and in exports, 3%. On-quarter figures, though, indicated a positive trend for developing countries, while trade of developed countries remained stable.

Region-wise, South-South trade (developing countries, excluding East Asia) posted stronger-than-average on-year decline during much of 2023, with a reversal in the fourth quarter. In fact, on-quarter as well, trade in the fourth quarter rose ~3%.

Trade in most regions declined on-year in 2023, though. The exception was a significant increase in intra-regional trade for the African region. Also, the region comprising Russia and Central Asian economies registered sharp decrease in exports, but strong increase in imports. Trade in East Asian exhibited notable weakness as well, as was the case with intra-regional trade. Trade also was weak in Latin America during the last quarter and in the region comprising Russia and the Central Asian economies.

Conversely, trade grew for Africa and East Asia.

WTO negotiation: India secures multilateral victory

By January 2023, a total of 61 WTO members that were participating in the Joint Statement Initiative on Service Domestic Regulation had submitted requests for certification of their updated General Agreement on Trade in Services (GATS).

India, along with South Africa, has achieved a breakthrough in WTO negotiations on domestic service regulations. After objections to certification requests for updated GATS, India withdrew objections following consultations. India emphasised adherence to multilateral processes, ensuring non-discrimination principles.

India's key objective was reiterated during meeting and outlined in the revised certification requests of the WTO member involved. Working Party on Domestic Regulations agreed on the course of action for those WTO members aiming to include regulations on domestic matters in their GATS schedules as additional commitments. This outcome addressing a topic mandated by multiple parties within multilateral forum, reaffirmed India's commitment to preserving the multilateral nature of WTO.

Regional Comprehensive Economic Partnership

The Regional Comprehensive Economic Partnership (RCEP) is a multilateral FTA between Australia, China, Japan, New Zealand, South Korea and member states of the Association of Southeast Asian Nations (ASEAN, comprising Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam). The 15 countries account for ~30% of the world's population and nearly 30% of global GDP.

To be sure, RCEP is the world's largest FTA by members' GDP.

RCEP countries have agreed to progressively abolish 90% of all tariffs on goods between participating members. The agreement also simplifies customs procedures and rules of origin laws between countries. Rules of origin restrictions generally tend to constrain the development of regional supply chains, which means the new provision will reduce the potential regulatory friction for firms and countries in terms of trade.

On November 2019, India decided to opt out of RCEP. India has a trade deficit with 11 out of the 15 RCEP countries and the content of the RCEP deal did not provide protection for the Indian economy. India's reservations were related to tariff commitments, investments, electronic commerce, rules of origin and auto trigger mechanisms. Further, given the economic slowdown then, the Indian government faced tremendous pressure from different sections of the industry and political organisations to not join the RCEP. Various ministries such as agriculture, steel, chemical and MSME had also opposed the deal.

Joining the RCEP would have made India a part of the rule-making body of what was supposed to be the largest trade agreement in the world. The RCEP was also expected to push India to pursue much needed domestic

reforms to make the manufacturing sector more competitive. India already had bilateral FTAs with ASEAN, South Korea, Japan and negotiations were underway with Australia and New Zealand. Also, the inclusion in the RCEP of China, with whom India had a trade deficit \$54.7 billion in 2018 – that accounted for half of the country's total trade deficit – was a cause of concern for India.

2. Overview of the Indian economy

2.1. Review of GDP growth over fiscal 2019-2024 and Outlook for fiscal 2024-2029

India ranks as the world's 5th largest economy and is the fastest growing among major economies. The Indian economy logged 4.3% CAGR between fiscals 2019 and 2024. This was a sharp deceleration from a robust 6.7% CAGR between fiscals 2017 and 2019, which was driven by rising consumer aspirations, rapid urbanisation, the government's focus on infrastructure investment and growth of the domestic manufacturing sector. Economic growth was supported by benign crude oil prices, soft interest rates and low current account deficit. The Indian government also undertook key reforms and initiatives, such as implementation of the Goods and Services Tax (GST), Insolvency and Bankruptcy Code, Make in India, financial inclusion initiatives, and gradual opening of sectors such as retail, e-commerce, defence, railways, and insurance for foreign direct investments (FDIs).

A large part of the lower growth between fiscals 2018 and 2023 was because of the economy contracting 5.8% in fiscal 2021 owing to the fallout of Covid-19. The pandemic's impact was more pronounced on contact-sensitive services and social distancing norms-affected services such as entertainment, travel, and tourism, with many industries in the manufacturing sector also facing issues with shortage of raw materials/components as lockdown in various parts of the world upended supply chains.

Over the period, India's economic growth was led by services, followed by the industrial sector, while in part impacted by demonetisation, the non-banking financial company (NBFC) crisis, slower global economic growth, and the pandemic.

As lockdowns were gradually lifted, economic activity revived in the second half of fiscal 2021. After a steep contraction in the first half, owing to rising number of Covid-19 cases, GDP moved into positive territory towards the end of fiscal 2021. Subsequently, in fiscal 2022, India's real GDP grew 9.7% from the low base of fiscal 2021.

India's gross domestic product (GDP) exceeded expectations during first three quarters of fiscal 2024. According to the National Statistics Office's (NSO) second advance estimates (SAE), real GDP growth accelerated to 8.4% year-on-year in the third quarter of fiscal 2024 from 8.1% in the second quarter. Growth of the past two quarters were revised up (second quarter was revised to 8.1% from 7.6%, and first quarter to 8.2% from 7.8%)

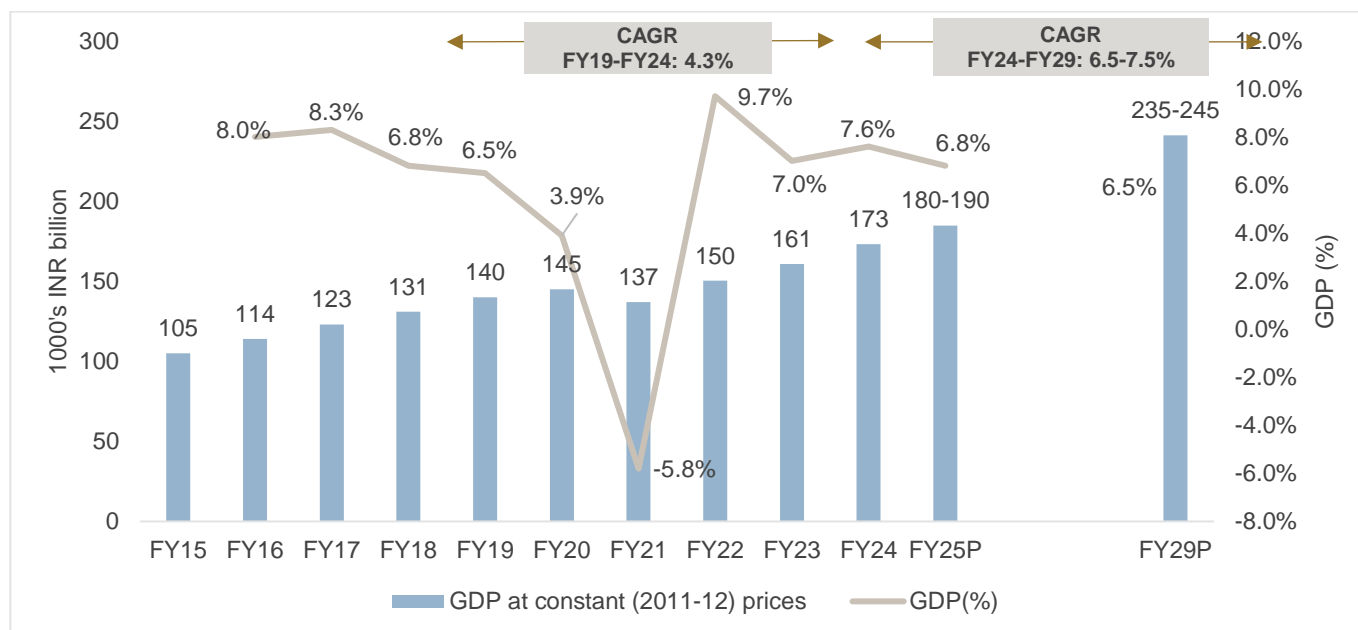
NSO now pegs GDP growth at 7.6% in fiscal 2024 compared with 7.3% as per the first advance estimates. Based on this second advance estimate, growth in the fourth quarter of this fiscal is estimated to slow to 5.9%. Additionally, the estimate for fiscal 2023 was revised to 7.0%, while for fiscal 2022 it was revised to 9.7%.

Growth surpassed forecasts in the second quarter of fiscal 2024, driven by strong government spending and a sharp rise in manufacturing and construction growth. Globally, growth in major economies such as the US and China beat estimates, contributing to better export earnings for India.

After a strong GDP estimate in the past three fiscals, CRISIL MI&A expects GDP growth to moderate to 6.8% in fiscal 2025. Fiscal consolidation will reduce the fiscal impulse to growth. Rising borrowing costs and increased regulatory measures could weigh on demand. Exports could be impacted due to uneven growth in key trade partners and any escalation of the Red Sea crisis. On the other hand, another spell of normal monsoon and easing inflation could revive rural demand.

Reducing the fiscal 2024 deficit will reduce the government's direct support for economic growth, but investing in high-quality spending could still boost investment and rural incomes. CRISIL MI&A anticipates a return to normal levels of indirect tax impact on GDP. However, uneven economic growth in major trade partners like the US and EU, along with escalating tensions in the Red Sea, may hinder exports.

India's GDP growth trend and outlook



Note: P – projected

Source: National Statistical Office (NSO), International Monetary Fund (IMF), CRISIL MI&A Consulting estimates

In the third quarter of fiscal 24, fixed investments posted year-on-year growth of 10.6% while private consumption (3.5%), despite a modest uptick, remained sluggish. The drag from net exports eased in the third quarter. From the supply side, growth was highest for manufacturing (11.6%), followed by construction (9.5%) and services (7.0%), while growth in agriculture contracted in the third quarter (-0.8%).

Similarly, growth in the fiscal year 2024 till Q3 has been driven by fixed investments (10.2% growth), while private consumption at 3.0% trailed overall GDP growth. On the supply side, industry grew the most (9%), followed by services (7.5%), while agriculture (0.7%) lagged.

2.2. Near-term review and outlook on GDP

India transition to the world's fifth largest economy and fastest growing among major economies has been on the back of services, industry and agriculture sectors firing.

Services sector key growth driver

In fiscal 2020, the services sector accounted for 55.3% share of India's GDP vs 52.4% in fiscal 2015. However, in fiscal 2021, its share had dipped to 53.6%, owing to the onset of the pandemic, with marginal improvement in fiscal 2022 following gradual normalisation of market operations.

The industrial sector, which logged a 7.1% CAGR between fiscals 2015 and 2019, was the second-largest contributor, at ~31% share of GDP. As was the case with services, the contribution of industrial declined in GDP declined in fiscal 2021 as well, with slowdown in economic growth. Before the slowdown in overall economic activity in the fiscal, India's industrial sector output growth was supported by the government's Make in India initiative, rising

domestic consumption and implementation of GST. The initiatives improved India's position on the World Bank's Ease of Doing Business index to 63 in fiscal 2019 from 142 in fiscal 2014.

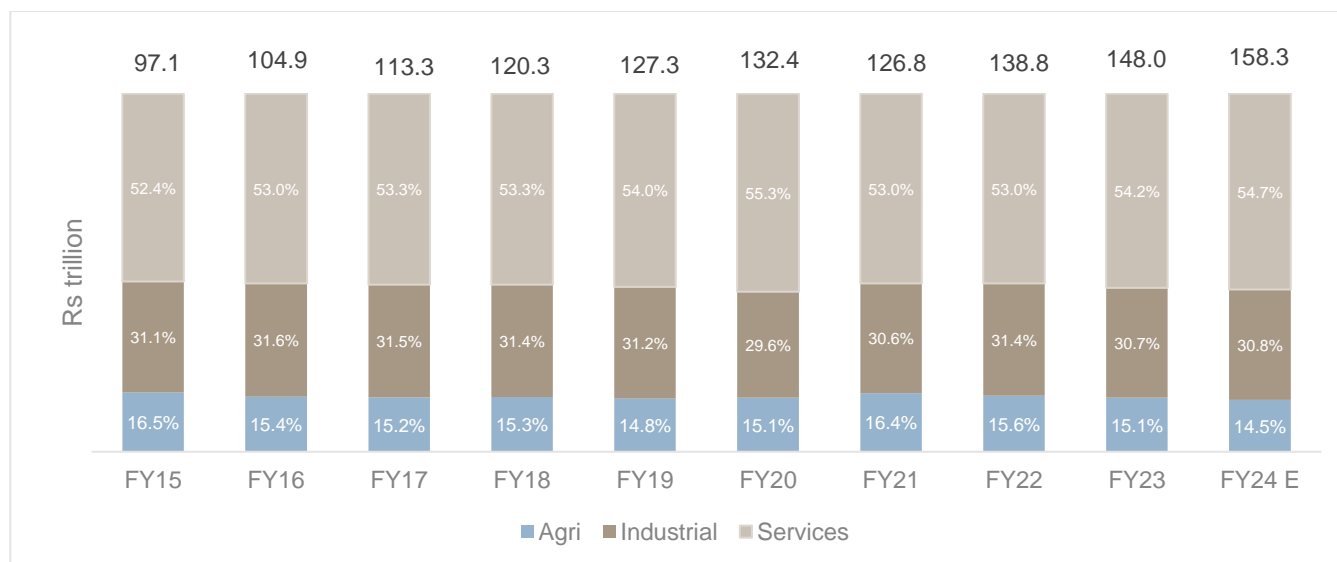
To be sure, the pandemic and subsequent lockdown exacerbated the economic slowdown in fiscal 2021, with the services segment the worst affected, declining 8.2% on-year, mainly because of decline in trade, hotels, transport and communication services (THTC) by 19.7% as well as decline in public administration, defence and other services by 7.6%. The industrial sector followed, declining 0.9% on-year. Agriculture was the only sector that grew 4.1% on-year, thereby restricting a further contraction in GDP.

In fact, during the fiscal, the agriculture sector's share in GVA (gross value added) at constant prices expanded, while the share of the services and industrial sectors contracted.

In fiscal 2022, agriculture GVA rose 3.5% and the industrial sector, 12.0%, on a low base of fiscal 2021, whereas the service sector grew 8.8%. This primarily supported a 9.7% rise in GDP.

In fiscal 2023, agriculture GVA continued to grow at a steady 4.0%, thereby its share in GDP continued to expand. The share of industrial sector in GDP also rose 4.0% on a high base, mainly because of utility services, which rose the sharpest among the industrial components, by 8.0%. Other growth segments were mining (grew 5.0%) and manufacturing and construction (grew marginally). The services sector grew 9% in fiscal 2023. Trade, hotels, transport, and communication services (THTC) saw strong on-year growth of 14% in fiscal 2023.

Share of sector in GVA at constant prices



E – estimated

Source: RBI; CRISIL MI&A Consulting

In fiscal 2024, the agri sector is estimated to have expanded ~0.7% on-year, thereby contributing to 14.4% of the GVA. The services sector, though, is expected to remain the economy's engine, growing 7.5%, with its share in GVA at 54.7%, whereas industry will maintain a 30.8% share.

In fact, services growth picked up (7.0% in the third quarter vs 6.0% in the second quarter). Within the space, growth in THTC accelerated (6.7% vs 4.5%), spurred by the festive season. Financial, real estate and professional services also picked up 7.0% from 6.2%, supported by an acceleration in services export growth (5.5% vs 4.6%) and favourable base effect. Financial services benefited as well from healthy credit momentum. And public administration, defence and other services grew 7.5% vs 7.7%.

Meanwhile, agriculture and allied GVA contracted 0.8% in the third quarter of last fiscal (compared with 1.6% growth in the second quarter). While partly the result of a highly unfavourable base, it was also because of a fall in kharif output as per the government's second advance estimates. Hence, owing to the higher growth in services, CRISIL estimates that the contribution of the agri sector to have lost ground.

Manufacturing leads growth in third quarter of fiscal 2024

Among the major producing sectors, the highest growth in the third quarter of fiscal 2024 was manufacturing, at 11.6% on-year, though the rate of increase was a moderation from 14.4% growth in the previous quarter. Construction GVA grew at a healthy pace despite some slowdown (9.5% vs 13.5%) and was supported by continued government capital expenditure (capex) in infrastructure.

Real GDP growth over fiscals 2024 to 2029

For the fiscal 2025, India's gross domestic product (GDP) growth is expected to moderate to 6.8% after a better-than-expected 7.6% expansion in fiscal 2024, given that high interest rates and lower fiscal impulse (from reduction in fiscal deficit to 5.1% of GDP) would temper demand and the net tax impact would normalize.

Additionally, uneven economic growth of key trading partners and escalation of geopolitical uncertainties can lower exports. But there will be support from other areas. Continued disinflation will prop up the purchasing power of consumers. Healthy rabi sowing and good kharif output (assuming another spell of normal monsoon is ahead) will bolster agricultural incomes. Further, a gradual pick-up in private capital expenditure (capex) will make investment growth more broad-based. The government has also provided budgetary support to rural incomes and infrastructure spending.

The lowering of fiscal deficit will mean curtailed fiscal impulse to growth, but good quality of spending would provide some support to the investment cycle and rural incomes. CRISIL also expects a normalisation of the net indirect tax impact on GDP witnessed in the current fiscal. Uneven economic growth in key trade partners such as the United States (US) and the European Union, and an escalation of the ongoing Red Sea tensions can act as drag on exports.

Risks to growth

Weak monsoon

Rainfall in the country during June to September 2023 was 94% of the long period average (LPA). To be sure, deficient rainfall has a significant impact on the rural demand.

Inflation pressure

Inflation data released in April 2024 showed Consumer Price Index (CPI) inflation eased to a 5-month low of 4.9% in March from 5.1% in February. While core inflation declined to a record low of 3.3%, fuel inflation declined to 3.2% on the back of lower domestic fuel prices. The worry, though, remains on persistently high food inflation, at 8.5%.

External drag on growth

Global growth is likely to slow down this year because of higher interest rates. Central banks in key advanced economies have maintained policy interest rates in their latest meetings. However, improving inflation outlook will allow the RBI to initiate rate cuts in fiscal 2025. Geopolitical uncertainty, though, will continue to disrupt global trade.

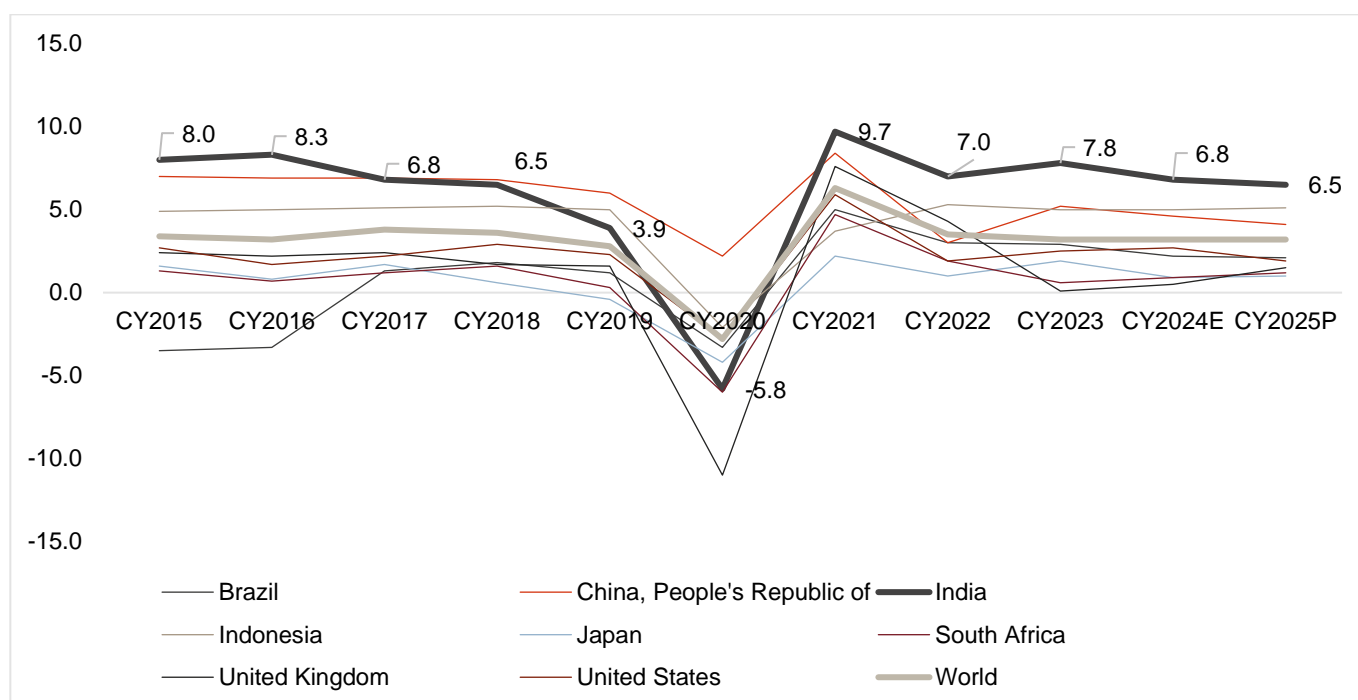
Impact of higher interest rates

The transmission of past rate hikes by the RBI's Monetary Policy Committee (MPC) is still playing out amid tight liquidity conditions, which suggests a further rise in market lending rates in the near term. This will moderate domestic demand. The RBI's move to increase the risk weights on consumer credit exposure of banks and NBFCs is also expected to mildly affect overall credit growth this fiscal.

India to remain a global outperformer

Despite slowdown in the near term, India's economy is expected to outperform over the medium run. CRISIL MI&A expects GDP growth to average 6.8% between fiscals 2025 and 2029 vs 3.2% globally, as estimated by the IMF.

India is one of the fastest growing economies (GDP growth, % year-on-year)



E – estimated; P – projected

Note: GDP growth based on constant prices

Source: IMF (World Economic Outlook – April 2024 update), CRISIL MI&A Consulting

Drivers for India's economic growth

- Capital will continue to be the biggest contributor to growth. However, as the government pursues fiscal consolidation, its role in boosting overall capex will partly diminish compared with the past few years.
- Also, strong domestic demand is expected to drive India's growth over peer economies in the medium term.
- Investment prospects are optimistic, given the government's capex push, progress of the Production Linked Incentive (PLI) scheme, healthier corporate balance sheets, and a well-capitalised banking sector with low non-performing assets.
- India is also likely to benefit from its diversification of the supply chain for incoming FDI flows, as global supply chains get reconfigured with focus shifting from efficiency towards resilience and friend shoring.
- Further, rising employment and notable increase in private consumption, buoyed by growing consumer confidence, are poised to drive GDP growth in the coming months.
- The government's future capex is expected to be supported by tax buoyancy, simplified tax structures with lower rates, reassessment of the tariff structures and digitalisation of the tax filing process.

- Medium-term growth is anticipated to be bolstered by increased capital spending on infrastructure and asset development projects, thereby translating into enhanced growth multipliers.

Near-term review and outlook on inflation

Consumer price inflation (CPI) eased to a 5-month low of 4.9% in March 2024 from 5.1% in February 2024. While core inflation declined to a record low of 3.3%, fuel inflation declined to 3.2% on the back of lower domestic fuel prices. The food inflation is high, at 8.5%. Higher cereals inflation, erratic vegetable inflation and elevated pulses inflation are a cause of concern given the India Meteorological Department's (IMD) prediction of higher-than-normal temperatures between April and June.

Although headline inflation eased to 5.4% on-year in fiscal 2024 from 6.7%, food inflation surged to 7.5% from an already high 6.6% in fiscal 2023. The March 2024 reading of 8.5% food inflation creates some disquiet given the prediction of higher-than-average temperatures over the next few months that can stress vegetable production and some of the rabi crop that is yet to be harvested. Beyond that, we expect food inflation to ease a tad on the back of the prediction of a favourable monsoon (above normal rains as per the IMD), some benefit from a high food inflation base and an expected seasonal downturn in pulses inflation.

We expect non-food inflation to remain comfortable, supported by softness in consumer demand, a pass-through of the previous year's oil price decline to domestic fuel (petrol and liquefied petroleum gas (LPG)) prices and an expectation of benign crude prices. Under these assumptions, we expect CPI inflation to average 4.5% in FY25. Intensification/persistence of geopolitical concerns and weather shocks, if any, pose an upside risk. Meanwhile, the government's budget is slimmer, which means the fiscal impulse to growth is also leaner and, therefore, less inflationary. All these factors contribute to the favourable conditions for interest rate reductions during this fiscal year, provided that potential hindrances such as food inflation or geopolitical escalations do not intervene and defer this decision.

Food inflation remains high

Food inflation rose to a six-month high of 9.4% year-on-year in June 2024 from 8.7% the previous month. Vegetables inflation rose for the first time in four months to 29.3% year-on-year in June 2024 from 27.4% in February 2024 despite a supportive base. On a seasonally adjusted basis, vegetable prices rose 3.4% on-month. Unlike the last three months, the rise in vegetables inflation was broad-based with both TOP (tomatoes, onions, potatoes) and non-TOP vegetables inflation rising. TOP inflation surged to 48.4% in June 2024, driven by onions (58.5% in June 2024 vs 38.1% in May 2024) and potatoes (57.6% in June 2024 vs 55.3% in May 2024). Despite an on-month uptick in prices (seasonally adjusted) tomato inflation eased to 26.4% in June 2024 from 41.3% in May 2024 owing to the high base of last year. Non-TOP vegetables saw inflation harden to 19.7% in June 2024 from 18.8% in May 2024 driven by leafy vegetables, brinjal, lady's finger, pumpkin, etc.

Foodgrain inflation was rigid at 10.2% year-on-year in June 2024, though 20 bps lower than the previous month. Cereals inflation inched up to 8.8% in June 2024 from 8.7% in May 2024, mostly owing to non-PDS wheat (6.7% in June 2024 vs 6.5% in May 2024). Pulses inflation eased a tad to 16.1% in June 2024 from 17.1% in May 2024.

While inflation in arhar dal declined sharply (26.9% in June 2024 vs 32.1% in May 2024), other pulses such as split gram (18.5% in June 2024 vs 14.8% in May 2024) saw a rise in inflation.

Inflation in milk rose for the first time in 13 months on account of a price hike by major milk producers (3% in June 2024 vs 2.6% in May 2024)

Edible oils inflation continued to log lower disinflation for the fifth consecutive month to -2.7% in June 2024 from -6.7% in May 2024.

Fuel inflation falls further

Fuel prices fell 3.7% year-on-year in June 2024, remaining in deflation for the 10th straight month. Although global oil prices remain under pressure, the government subsidy for LPG has kept fuel inflation negative. Prices of liquefied petroleum continued to deflate year-on-year in June 2024 (-24.8%). Electricity inflation moderated to 8.8% in June 2024 from 10.9% in May 2024 owing to a supportive base.

Core inflation eases to a record low

Core inflation inched down to a record low of 3.1% in June 2024. Inflation slid in the essential categories of education to 3.6% in June 2024 from 4.1% in May 2024. On the other hand, inflation picked up in personal care and effects to 8.2% in June 2024 from 7.7% in May 2024, led by rising gold prices to 19.7% in June 2024 as compared to 10.2% in previous month. Services inflation eased 10 bps to a record low of 2.9% in June 2024, while core goods inflation was steady at 3.2%.

WPI inflation accelerates

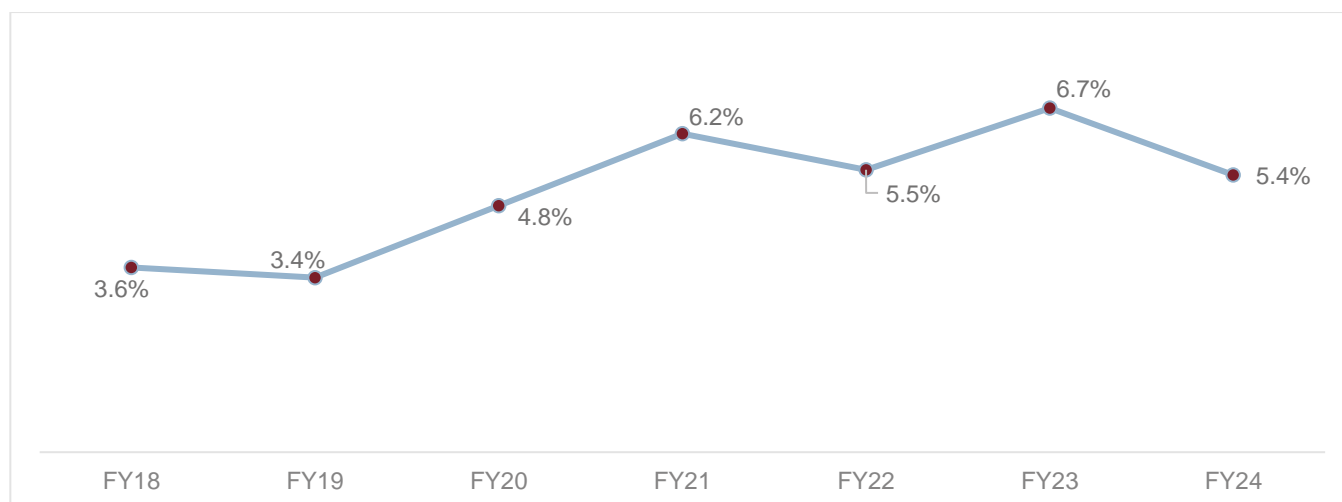
Wholesale Price Index (WPI)-linked inflation accelerated for the fourth straight month to a 16-month high of 3.4% in June 2024 from 2.6% in May 2024. WPI food inflation rose for the sixth consecutive month to 8.7% from 7.4%, led by soaring vegetable inflation (38.8% vs 32.4%). Onions were the main reason for the higher WPI vegetable inflation, with the inflation rate rising to 93.4% from 58.0%. Inflation also rose in potatoes (64.1% vs 66.4%). A high base, though, lowered tomato inflation; still, it remained high (57.8% vs 64.6%). Foodgrain inflation was relatively steady, rising just 20 bps to 11.6%. Non-food inflation crept up as well, though it was still benign (1.2% vs 0.7%). Crude petroleum inflation rose to 14.0% from 11.1%. Fuel and power inflation was broadly unchanged at 1.0% vs 1.3% in the previous month. Inflation in manufactured products, which accounts for nearly a third of the WPI, rose to 1.4% from 0.8%, driven by manufactured foods (4.3% vs 2.7%), basic metals (1.1% vs 0.3%) and chemicals (-1.1% vs -2.7%).

Outlook on inflation

While headline Consumer Price Inflation (CPI) eased to 5.4% year-on-year in fiscal 2024 from 6.7%, food inflation surged to 7.5% from a high of 6.6% in fiscal 2023. The June 2024 reading of 9.4% food inflation raises concerns, particularly with the prediction of higher-than-average temperatures in the coming months, which could strain vegetable production and some yet-to-be-harvested rabi crops. Looking ahead, we anticipate a slight easing in food inflation, driven by favorable monsoon predictions (above-normal rains according to the IMD), some relief from a high base of food inflation, and an expected seasonal decline in pulses inflation.

We anticipate non-food inflation to remain manageable, supported by subdued consumer demand, the impact of previous year's oil price declines on domestic fuel prices (petrol and LPG), and expectations of stable crude prices. Based on these assumptions, we project CPI inflation to average 4.5% this fiscal year. However, intensification or persistence of geopolitical tensions and weather-related shocks pose an upside risk to this forecast. Moreover, with a leaner government budget, the fiscal impulse to growth is diminished, which could alleviate inflationary pressures. These factors create a conducive environment for potential rate cuts this fiscal year, unless challenges such as food inflation or geopolitical tensions intervene and delay such decisions. Hence, CRISIL expects CPI inflation to average 4.5% in fiscal 2025 against an estimated 5.4% in fiscal 2024.

CPI trendline



Source: Ministry of Statistics and Programme Implementation (MOSPI), CRISIL MI&A Consulting

Cooling domestic demand, assumption of a normal monsoon along with a high base for food inflation should help moderate inflation this fiscal. A non-inflationary Interim Budget 2024-25 that has focused on asset creation rather than direct cash support also bodes well for core inflation. However, an unusual weather event could reverse the easing. Similarly, recent geopolitical uncertainties in the Middle East and a fading low base effect for commodity prices could put some upside pressure on core inflation, and would, therefore, need monitoring.

Nevertheless, we believe slowing inflation, a smaller fiscal deficit and an imminent turn in the Fed's policy rates will lay the ground for the RBI's MPC to start cutting rates. However, we believe more clarity on the path of disinflation could push this decision at least to June 2024, if not later. While CPI inflation has remained in the RBI's tolerance band of 2-6% since August, it is still shy of the 4% target, thereby keeping the MPC on guard.

Factors having direct bearing on auto demand

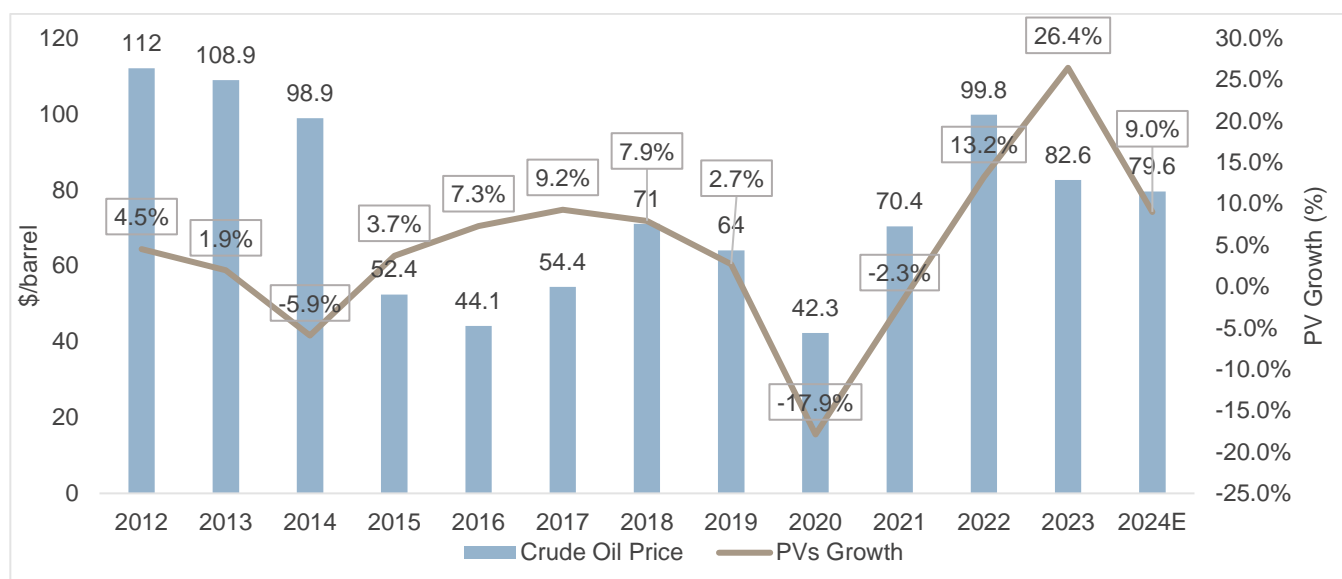
Fluctuations in crude oil prices and the rupee-dollar exchange rate directly affect automobile demand as these two factors increase fuel costs and import costs, respectively. Also, monsoons, which have a direct bearing on crop yields and food prices, in turn, impact auto demand as it shapes consumer spending behaviour and economic trajectory. Auto finance rates are pivotal in determining affordability. Moreover, private final consumption expenditure (PFCE) and per capita income provide a lens into consumer purchasing power, influencing affordability and, thereby, automobile demand.

Elevated recessionary fears to impact crude oil prices

Crude oil prices have largely risen since end-2021 by ~24% till fiscal 2024. Prices rose further following geopolitical uncertainty in Europe, with prices averaging \$100 per barrel (bbl) in 2022. In fact, prices rose to \$106 per bbl in the first half of 2022 as the geopolitical uncertainty resulted in a significant shift in the crude oil supply chain. However, increasing recessionary fears stemming from elevated inflation, along with interest rate hikes globally, considerably affected consumption and economic growth, dragging crude oil prices towards \$94 per bbl, or a decline of 11%, in the second half of 2022. In 2023, with the rebalancing in global crude oil trade, prices slipped to \$82.6 per bbl.

In 2024, CRISIL MI&A Consulting expects prices to remain range-bound at \$75-80 per bbl. However, any decision by OPEC to cut production as well as a further decision on a ban of Russian crude oil are key factors to be monitored.

Crude oil price and passenger vehicle trend



E – estimated

Notes:

1) Price data is for calendar year

2) PVs Growth is for Financial Year and For FY24 the growth rate is based on actual number.

Source: Industry, CRISIL MI&A Consulting

In 2022, global crude oil supply rose a healthy 4 million barrels per day (mbpd), reaching 94 mbpd. Incremental growth in supply was driven by the US, Saudi Arabia, the UAE and Iraq, accounting for ~80% share. Crude oil supply, though, continued to be impacted in certain regions. Production-led challenges in Norway, Libya and Nigeria led to a 10% decline in output during the year. Supply chain and gas leak issues in Kazakhstan resulted in muted output from the country as well.

In 2023, ramping up of newer fields in Norway and increased production in North America led to healthy supply of crude oil. Higher drilling activities, along with lower logistical issues from the Permian Basin and Eagle Ford Basin, resulted in healthy supply growth in the US. However, incremental production cuts by OPEC and Russia continued to impact global crude oil supply during the year.

To be sure, rising crude oil prices typically lead to higher fuel costs, directing customer preference towards more fuel-effective vehicles. Increased production cost for automakers and potential shift in consumer spending due to inflation and economic conditions further influence automotive demand.

That said, certain factors will dictate long-term crude oil demand, such as slowing global GDP growth, structural changes, aggressive push towards electric vehicles (EVs), significant increase in vehicle efficiencies, and an ageing population, which has the propensity to consume less crude oil-based products and services, thereby translating into likely weakening in automobile demand.

Rupee-dollar exchange rate in 2024

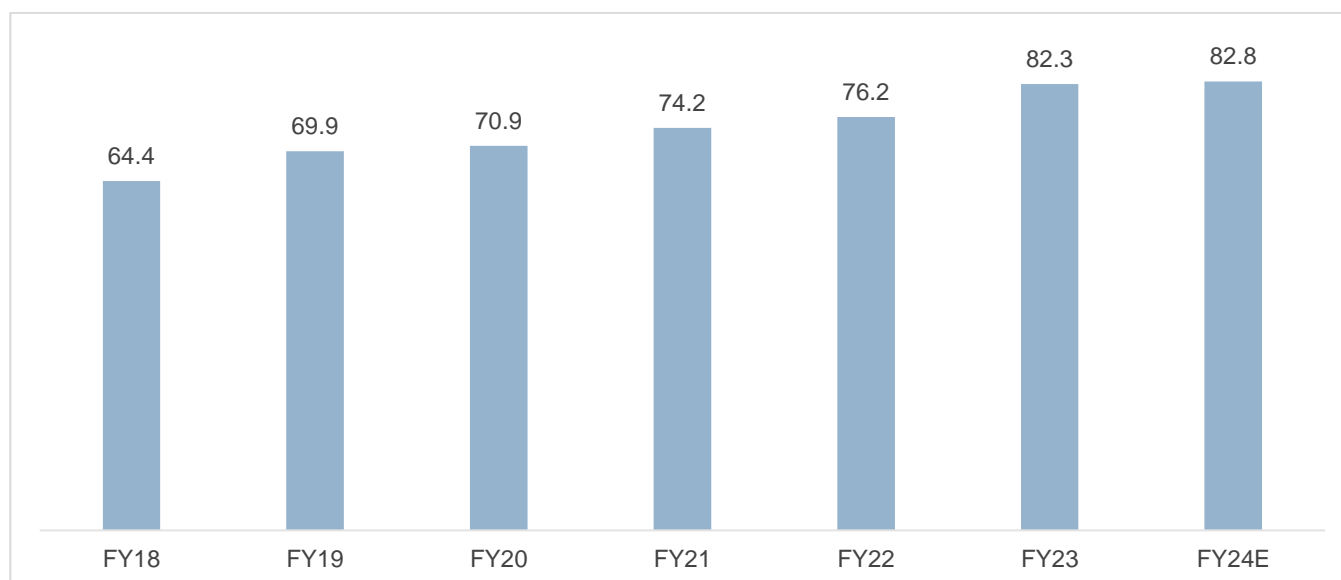
The rupee appreciated slightly against the dollar in February 2024, to Rs 82.96/\$, from Rs 83.12/\$ in January 2024 on strong capital inflows. This was despite the dollar index strengthening and India's trade deficit widening. In fact, on a monthly average basis, the rupee appreciated 0.2% compared with January.

The rupee remained one of the better-performing emerging market currencies in the first two months of 2024. The on-year rate of depreciation was also lower at 0.4% on average during the two months.

CRISIL expects the rupee to average to Rs 83.5/\$ by March 2025 compared with ~Rs 83/\$ in fiscal 2024. While a narrower current account deficit is expected to support the local currency, volatile external financing conditions could exert some pressure.

As mentioned, the rupee-dollar exchange rate impacts auto demand as it affects import costs. A weaker rupee raises input costs and fuel prices, which reduces domestic demand while enhancing export competitiveness. While increase in fuel prices directly impacts the consumer demand, rise in input costs may not always have a direct impact, as original equipment manufacturers do not always pass these costs to consumers. Any price increase that is passed on by OEMs directly affects the consumer's purchasing decision, though.

Rupee-dollar exchange rate



E – estimated

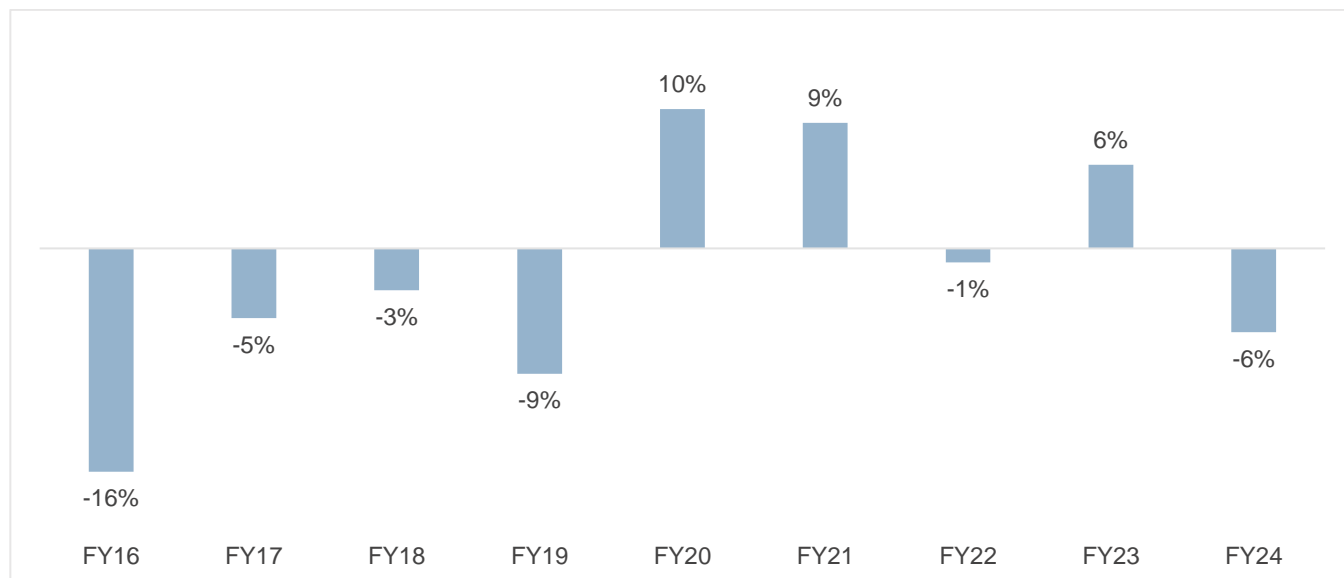
Source: RBI, CRISIL MI&A Consulting

Agri variables

Small and marginal farmers dominate the Indian agricultural landscape, comprising 86% share of land holdings. These farmers rely on the monsoon for irrigation; hence, its timely arrival and adequacy are needed for a good crop. Any negative impact on crop supply owing to low rainfall has a cascading effect on the Indian economy, as it leads to higher food prices and subsequently lower discretionary spending.

Monsoon has been favourable over the past few years with deviation within the acceptable range; As per the India Meteorological Department (IMD), monsoon deviation was 6% in fiscal 2023. However, fiscal 2024 witnessed an uneven spread of rainfall during the initial months. But rabi output was favourable, supporting farmer income during the early months of fiscal 2024. Also, while kharif sowing was initially delayed owing to a delay in arrival and spread of the monsoon, sowing picked up thereafter. Moreover, higher minimum support price (MSP) in the fiscal and good prices at the mandis maintained on-ground positivity.

Rainfall deviation trend



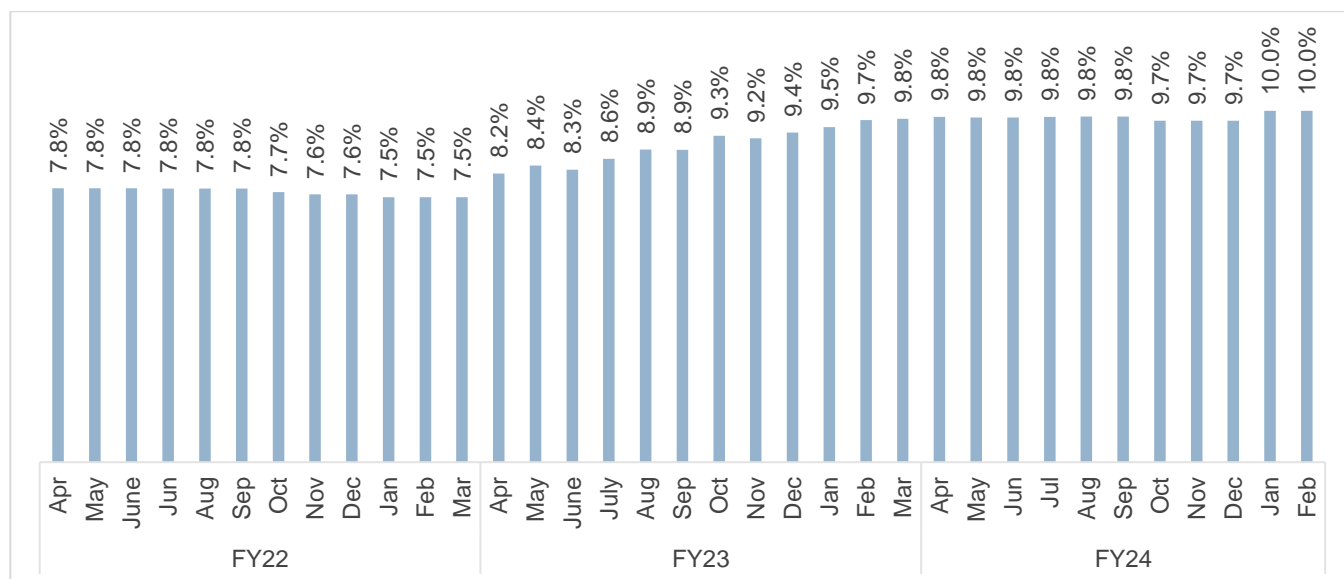
Note: When rainfall average across the country is within $\pm 10\%$ from its long period average (LPA) or 90-110% of LPA, the rainfall is considered "normal". The LPA for June-September was 868.6mm.

Source: IMD, CRISIL MI&A Consulting

Steep hike in auto finance rates

The sharp rise in repo rates from 2020 onwards has increased financing rates across automobile segments. Equated monthly installments in the passenger vehicle (PV) segment is currently witnessing interest rates of nearly 10%. Interest rates have reached the pre-pandemic levels and are expected to remain firm in the short term. Demand for cars- durable goods most often purchased on credit and higher interest rates makes auto loans more expensive, impacting the purchasing decisions of customers.

Average auto finance rates offered by banks



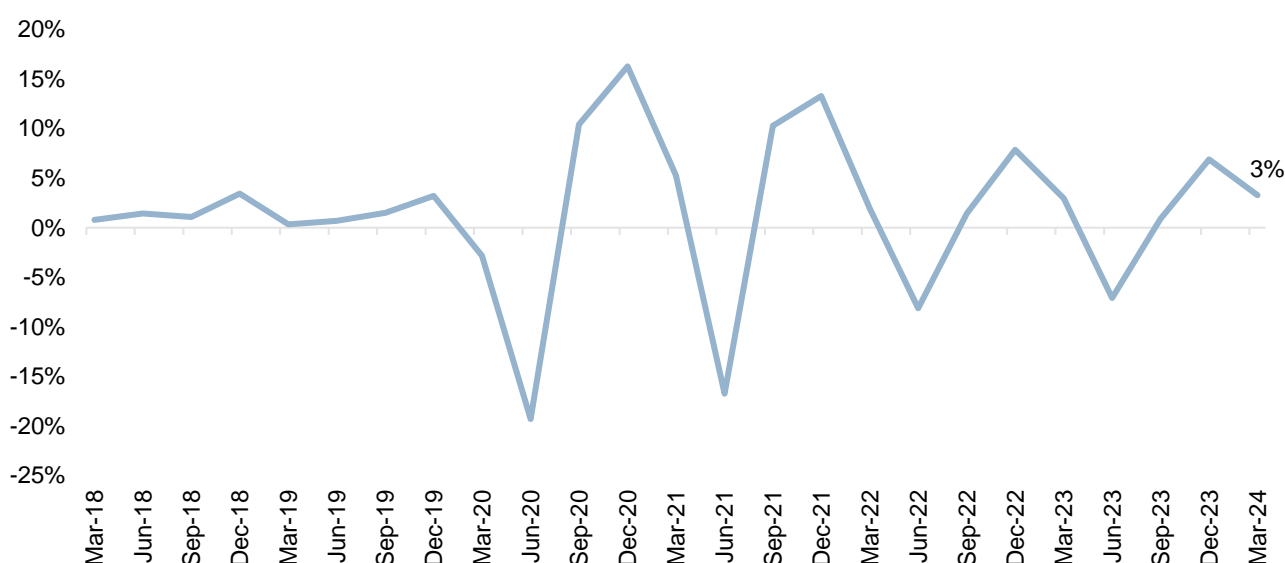
Source: Industry, CRISIL MI&A

Private consumption remains tepid

Private Final Consumption Expenditure (PFCE) reflects overall consumption patterns and spending capacity of households within an economy. When PFCE increases, it often translates to higher demand for various goods and services.

PFCE remained sluggish, though rising to 3.5% on-year in the third quarter of fiscal 2024 compared with 2.4% in the previous quarter. Rural demand indicators were mixed, with demand for work under Mahatma Gandhi National Rural Employment Guarantee Act (NREGA) slowing in the quarter while sales of two-wheelers surged. However, growth in consumer non-durables, production slowed considerably in the third quarter. But urban demand appears to have sustained some momentum in the quarter, with pick-up in the growth of passenger vehicle sales and consumer durables production, as well as continued double-digit growth in retail credit (18.1% vs 18.3% in the previous quarter). The latter indicates that the impact of past rate hikes and regulations on unsecured lending are still pending.

India's PFCE quarterly trend



Source: Industry, CRISIL MI&A Consulting

Per capita income

Per capita income (per capita net national income) is estimated to have grown 6.8% in fiscal 2024 vs 5.7% in fiscal 2023. This is in contrast to fiscal 2021, wherein per capita income declined 8.9%, owing to GDP contraction amid the pandemic's impact. In fiscal 2022, per capita income rose 7.6% on a lower base of fiscal 2021.

According to the IMF's estimates, India's per capita income (at current prices) is expected to grow at 8.8% CAGR over 2023 to 2028.

Rising income levels signify economic growth, urbanisation and changing lifestyles. As per capita income increases so does the demand for cars in India increases. As per data from World Road Statistics 2023-International Road Federation, in fiscal 2022, there were 24 cars per 1,000 people in India and the per capita income was \$2,390. In the case of China, cars per 1,000 people was 183 in 2021 and the per capita was \$11,930.

Policies impacting automobile industry

Improving infrastructure raises efficiencies in logistics

The government's capex push has been focused largely on transport-related sectors such as roads, railways and urban infrastructure. This is complemented with policies geared towards improving and integrating different segments of the logistics ecosystem. All these are expected to reduce bottlenecks and improve competitiveness of domestic production and trade via reduced logistics costs and improved connectivity.

- **National Infrastructure Pipeline (NIP):** The government has set targets for infrastructure development between fiscals 2019 and 2025. CRISIL MI&A Consulting expects aggregate (government plus private) spending on infrastructure to double by 2030, i.e. from ~Rs 67 trillion over fiscals 2017-2023 to ~Rs 143 trillion during fiscals 2024-2030, driven by spends on core infrastructure, i.e. roads, railways, airports, ports, urban infrastructure, irrigation, warehouses and telecom.
- **PM Gati Shakti - National Master Plan for Multi-modal Connectivity:** The multi-modal connectivity plan was unveiled in October 2021, with an objective of reducing logistics costs by coordinating the infrastructure creation activity of different government entities. The key characteristics of the scheme are:
 - Digital platform for coordination across 16 ministries, including roadways and railways
 - The Gati Shakti platform will subsume the infrastructure projects announced under NIP (valued at Rs 111 trillion)
 - Existing infrastructure schemes across ministries such as Bharatmala (roads), Sagarmala (ports), UDAN (air), inland waterways, dry ports, etc will be incorporated in the platform
 - The platform will also provide spatial data and implementation status for different projects
 - Eleven industrial corridors and two defence corridors are also planned under the scheme, covering clusters for textile, pharmaceutical, fishing, electronics, agriculture, etc
- Key targets set for different heads under the scheme are:
 - Ports: Capacity of the major ports to be increased from 1,282 million tonne in fiscal 2020 to 1,759 million tonne in fiscal 2025
 - National waterways: Cargo movement to be ramped from 74 million tonne in fiscal 2020 to 95 million tonne in fiscal 2025
 - Railways: Target of 1,600 million tonne by fiscal 2025 vis-à-vis 1,210 million tonne in fiscal 2020
 - MMLPs: The Indian Railways will set up 500 multimodal cargo terminals by fiscal 2025
 - Others: Gas pipeline length to be doubled from 17,000 km to 34,500 km within the country, incremental renewable capacity of ~150 GW, power line capacity target of ~452,000 circuit km by fiscal 2025

An integrated platform to monitor the progress of projects and logistics initiatives by different ministries will aid in increasing coordination and planning infrastructure creation and connectivity.

- **National Logistics Policy (NLP):** Launched in September 2022 to complement PM GatiShakti National Master Plan (NMP), NLP addresses the soft infrastructure and logistics sector development aspect, including process reforms, improvement in logistics services, digitisation, human resource development and skilling. NLP aims to: (i) reduce the cost of logistics in India, (ii) improve the Logistics Performance Index ranking – to be among top 25 countries by 2030 (India was ranked 38 out of 139 countries in 2023), and (iii) create data-driven decision support mechanism for an efficient logistics ecosystem. A Unified Logistics Integrated Platform has been set up under this, which, as of September 2023, had integrated 34 logistics portals/digital systems across 33

ministries/ departments, and had over 600 industry players registered. Twenty-one states have also notified their own logistics policies, in line with the NLP.

The infrastructure policies will enhance the logistical efficiency, thereby strengthening the supply chain for automobiles and auto components. These initiatives will lower the logistical cost and the lead time in components/automobile transit. In the case of raw materials, this allows various stakeholders in the ecosystem to have a clear understanding of raw material availability and necessary logistics for the same. Thus, these policies augment efficiency in production and supply.

Decoupling of global supply chains

As traditional supply chains are threatened by large-scale global events, rising trend in protectionism and wage inflation, there is a greater need for rethinking supply chain models to remain competitive. In the wake of global disruptions such as Covid-19, geopolitical crises, environmental disruptions, etc, significant decoupling of supply chains is underway to bring key supply links closer home.

To establish collective supply chains that would improve their resilience in the long term, 18 economies, including India, the US and the EU unveiled a roadmap in July 2022, which included steps to counter supply chain dependencies and vulnerabilities. This was done as a part of the ongoing supply chain derisking strategy of global companies/multinationals, wherein global companies are diversifying their businesses away from their reliance on a single large supplier, to alternative destinations. Beijing's Zero-Covid policy and the resultant disruptions to global supply chains, container shortage and higher lead times have served as an impetus to this strategy.

This reorientation has benefitted other Asian economies in southeast Asia and India. India can take advantage of the same as the enormous quantum of Chinese exports coupled with India's cost advantage in manufacturing

, would serve as a highly lucrative opportunity for Indian manufacturers. Realising this opportunity, the government has introduced many reforms and incentive schemes to increase domestic manufacturing and attract global manufacturing firms to India.

Lowering supply chain dependency

India and other countries are actively pursuing strategies to reduce supply chain dependency on a single country in the wake of the pandemic and growing geopolitical tensions.

This includes diversifying the supply chain by sourcing inputs from various countries to reduce the risk of over relying on a single country for sourcing and manufacturing. Furthermore, India is trying to strengthen the domestic manufacturing environment through various policy initiatives. Key strategies adopted by India to diversify the supply chain include:

- **Foreign investments:** India is attracting multi-national companies that are actively seeking to diversify their manufacturing base. Government stimulus includes tax benefits and incentive schemes. India has also regulated the FDI to attract investments from various countries across sectors
- **Domestic manufacturing:** The government is pushing domestic companies to develop products to reduce dependence on any one country. Booster initiatives include schemes such as Make in India, Atmanirbhar Bharat, China plus one, PMP and PLI.
- **Trade diversification:** India is actively engaging in trade pacts and FTA to diversify its trade partners. Strengthening trade ties with developing and developed economies offers alternatives to sourcing of goods and technology

To reduce dependency on China and prepare for potential future supply chain challenges, 14 nations under the Indo-Pacific Economic Framework (IPEF) (including the US, Japan and India) have reached an agreement to

augment supply chain resilience and diversification. The agreement involves sharing information with each other and coordinating responses during the time of crises. Under the agreement, the participating countries would establish an IPEF supply chain council, supply chain crisis response network, and labour rights advisory network that will provide a framework to strengthen supply chains and prevent potential disruptions.

Supply derisking

Companies are encouraged to minimise their supply chain dependency on China by diversifying the sourcing of raw materials/inputs to other countries. The goal is to reduce the risk of over-relying on a single country for sourcing and manufacturing.

Many western countries, including the US, have heavily relied on China for outsourcing their manufacturing. Low labour and production costs are one of the major reasons for this, as well as factors like China's strong domestic market, supply chain, infrastructure, free trade and tax agreements, and high growth potential. Regardless of the reasoning behind the reliance, global dependency on China became a risk as early as 2008.

By establishing additional sourcing and manufacturing locations outside China, companies have found a way to mitigate business risks, access new consumer markets, and explore other innovation and technology, while keeping their operations cost-effective.

Today, geopolitical and economic factors drive much of the urgency behind businesses, implementing supply derisk approach. The approach gained traction due to the US-China trade war in 2018. As tensions escalated during Donald Trump's presidency, businesses became uncertain about how their supply chain and operations would be affected. Additionally, the Covid-19 pandemic exposed vulnerabilities in global supply chains, especially for those who relied on China alone. Other issues, such as rising labour costs in China and various Chinese political movements, have also contributed to the rise of supply derisking in recent years.

Make in India

The Make in India initiative was launched in September 2014 to boost manufacturing in India and encourage FDI in manufacturing and services. The key objective was to increase the share of manufacturing in GDP to 25% by 2020 by boosting investments, fostering innovation and intellectual property. The other objective was to build best-in-class infrastructure for manufacturing across sectors, including, but not limited to automobile, auto components, aviation, biotechnology, chemicals, construction, defence manufacturing, electrical machinery, electronic systems, food processing, mining, oil and gas, pharmaceuticals, renewable energy, thermal power, hospitality and wellness.

To achieve this objective, a dedicated Investor Facilitation Cell was set up to assist investors get regulatory approvals, offering hand-holding services through the pre-investment phase, execution and after-care support. Key facts and figures, policies and initiatives and relevant contact details were made available through print and online media. Indian embassies and consulates proactively disseminated information on the potential for investment in the identified sectors in foreign countries while domestically, regulations and policies were modified to make it easier to invest in India.

FDI inflows have received an impetus, as India jumped to the 8th rank in the list of the worlds' largest FDI recipients in 2020 from the 12th position in 2018, according to the World Investment Report 2022. FDI to India almost doubled to \$ 83.6 billion in fiscal 2022 from \$ 45.15 billion in fiscal 2015. However, in fiscal 2023, FDI inflow decreased to \$ 71 billion (provisional figure). According to the Ministry of Commerce & Industry, FDI inflow in the past nine fiscals (2014-2023: \$ 596 billion) has increased 100% over the fiscals 2005-2014 (\$ 298 billion) and is nearly 65% of the total FDI reported in the past 23 years (\$ 920 billion).

However, the share of manufacturing in GDP has not attained the intended levels of 25%. Hence, additional policies were announced, and targets rolled forward initially to 2022 and then to 2025. Domestically, multiple steps were taken to make sectors more attractive and to ease the investment processes. Some of the major steps taken included announcement of the NIP and reduction in corporate tax. Various sectors such as defence manufacturing, railways, space and single brand retail have been opened for FDI. Measures to boost domestic manufacturing were also taken through Public Procurement Orders (PPO), Phased Manufacturing Programme (PMP) and PLI schemes. Many states launched their own initiatives along similar lines to boost manufacturing in their respective states.

FDI

FDI plays a pivotal role in economic growth, aiding development and shaping of the economic landscape. Through the FDI route, international corporations can invest in India, capitalising on the country's investment incentives such as tax incentives and relatively competitive labour costs. This fosters job creation and offers various additional advantages along with facilitating the acquisition of technological expertise from global peers.

India has opened two FDI routes: automatic and government. The automatic route allows foreign investors to invest in sectors without requiring prior approval from the Indian government. Under this route, investors are only required to notify the RBI within a specified time frame. In contrast, the government route mandates prior approval from the Indian government or relevant authorities for investments in India. In April 2020, the DPIIT amended the FDI Policy, that the countries which share a land border with India (i.e. China, Bangladesh, Pakistan, Bhutan, Nepal, Myanmar and Afghanistan) can invest only under the government route. Shortly, it will be mandatory to obtain government approval for investments from these countries. FDI proposals from these countries must go through tight scrutiny and the government has set up an inter-ministerial panel to review these proposals. All ministries and departments have been recommended to have dedicated FDI cells to process these proposals quickly. This policy, thus, restricted entry and expansion of Chinese OEMs, including MG and Great Wall Motors, in India by restricting them to invest or raise funds from China.

Summary of FDI in key Indian sectors

Sector	FDI Cap	Route
Automobile	100%	Automatic
Airports - greenfield projects	100%	Automatic
Satellites - establishment and operation, subject to the guidelines of Department of Space/ISRO	74%	Government
Hospitals sector	100%	Automatic
Defence	49% +	Government up to 100% of local defence ventures after obtaining approval

Source: DPIIT, CRISIL MI&A Consulting

Atmanirbhar Bharat Campaign

Atmanirbhar Bharat Abhiyan or the self-reliant India campaign was launched in May 2020 amid the Covid-19 pandemic, with a special and comprehensive economic package of Rs 20 trillion, equivalent to 10% of the country's GDP.

The scheme was launched with the primary intent of fighting the pandemic and making the country self-reliant based on five pillars: economy, infrastructure, technology-driven system, demography and demand. The stimulus package announced by the government under the scheme consisted of five tranches, intended to boost businesses (including micro, small and medium enterprises or MSMEs), help the poor (including farmers), boost agriculture,

expand the horizons of industrial growth, and initiate governance reforms in the business, health and education sectors.

The mission emphasises the importance of encouraging local products and aims to reduce import dependence through substitution. It also aims to enhance compliance and quality requirements to meet international standards and gain global market share.

The government has also rolled out other reforms — supply chain reforms for agriculture, rational tax systems, simple and clear laws, capable human resources and a strong financial system — to further promote business, attract investments and strengthen the Make in India initiative.

PLI scheme boosts industrial investments in the short to medium term

The PLI scheme's primary objective is to make manufacturing in India globally competitive by removing sectoral obstacles, creating economies of scale and ensuring efficiency. It is designed to create a complete component ecosystem in India and make the country an integral part of the global supply chain. Furthermore, the government hopes to reduce India's dependence on raw materials imported from China. The scheme is expected to boost economic growth in the medium term and create more employment opportunities, as many of the sectors covered under the scheme are labour-intensive. It will be implemented over fiscals 2022 to 2029.

The PLI scheme is a time-bound incentive scheme by the government, which rewards companies in the 5-15% range of their annual revenue based on the companies meeting pre-decided targets for incremental production and/or exports and capex over a base year. The stronger-than-expected pick-up in demand and larger companies gaining share over smaller companies led to revival of capex in fiscal 2022. The rise of capital in fiscal 2024 was on account of the expansion plans by India Inc.

Construction spends across industrial investments are seen rising 6-8% in fiscal 2024, driven by expansion in the oil and gas and metals segments. Growth is on a low base of fiscal 2023, when the sector faced a slight bump owing to geopolitical issues in the previous two fiscals. However, the PLI scheme is expected to provide the necessary boost to the sector.

Based on an analysis of eight key sectors, CRISIL MI&A Consulting projects construction investment in the industrial segment at Rs 4.0-4.1 thousand billion between fiscals 2023 and 2027, up 1.3 times over spends between fiscals 2018 and 2022. The rise in investments is projected on account of inclusion of the PLI scheme in the capex of the industrial sector.

Budgeted incentives for each sector under the PLI scheme

Sector	Segment	Budgeted (Rs bn) *	
Automobile	Advance chemistry cell (ACC) battery	181.0	751.4
	Automobiles and auto components	570.4	
Electronics	Mobile manufacturing and specified electronic components	409.5	545.15
	Electronic/technology products/IT hardware	73.25	
	White goods (ACE and LED)	62.4	
Pharma and medical equipment	Critical key starting materials/drug intermediaries and active pharmaceutical ingredients	69.4	253.6
	Manufacturing of medical devices	34.2	
	Pharmaceutical drugs	150.0	
Telecom	Telecom and networking products	122.0	122.0

Sector	Segment	Budgeted (Rs bn) *	
Food	Food products	109.0	109.0
Textile	Textile products: man-made fibre (MMF) and technical textiles	106.8	106.8
Steel	Speciality steel	63.2	63.2
Energy	High-efficiency solar PV modules	240.0	240
Aviation	Drones and drone components	1.2	1.2
Total			2,192

*Note: Approved financial outlay over a five-year period

ACE: Appliance and consumer electronics; LED: Light-emitting diode

Source: Government websites, CRISIL MI&A

The Union budget 2024-25 allocated Rs 751.4 billion for automobiles, auto components and ACC:

- Rs 570.4 billion allotted for enhancing India's manufacturing capabilities or the automobile and auto component industry - Advanced Automotive Products (AAT). The scheme has two components: Champion OEM Incentive Scheme and Component Champion Incentive Scheme. A total of 95 applicants have been approved under this PLI scheme.
- Rs 181 billion under the National Programme on Advanced Chemistry Cell (ACC) Battery Storage for achieving manufacturing capacity of 50 Giga Watt Hour (GWh) of ACC. Four companies have been selected till date for incentives under the PLI scheme for ACC battery storage.

PLI scheme for the automotive industry: The PLI scheme for the automotive industry intends to promote high-tech green manufacturing -- ATT vehicles such as electric and hydrogen fuel cell vehicles. This scheme excludes conventional petrol, diesel and CNG segments (internal combustion engines), as they have sufficient capacities in India. In the auto components category, more than 100 ATT components (including hydrogen fuel cells, hydrogen injection systems, EV motors and lightweight cryogenic cylinders) are eligible for PLI.

The PLI scheme for auto parts includes the following component schemes:

- Champion OEM Scheme: It is a sales value-linked plan, applicable to battery electric and hydrogen fuel cell vehicles of all segments.
- Component Champion Incentive Scheme: It is a sales value-linked plan for advanced technology components, complete- and semi-knocked down (CKD/SKD) kits, vehicle aggregates of two-wheelers, three-wheelers, passenger vehicles, commercial vehicles and tractors, including automobiles meant for military use and any other advanced automotive technology components prescribed by the Ministry of Heavy Industries – depending on technical developments

PLI scheme for the automotive and ACC: The policy on ACC battery storage was approved by the Government of India on May 2021 with budgetary outlay of Rs 1,81,000 million for setting up manufacturing facilities with a total manufacturing capacity of 50 GWh. This policy will strengthen the ecosystem for EVs and battery storage in the country.

GST structure for the industry

The two taxes charged to the end consumer on cars and bikes previously were excise and VAT, with an average combined rate of 26.50% to 44% which is higher than the GST rates of 18% and 28%. Therefore, there has been less burden of tax on the end consumer under GST since 2017. Importers/dealers can cheer as they would be able to claim the GST paid on goods imported/sold whereas previously, they were ineligible to claim the excise duty and VAT paid.

GST on cars and bikes is kept under the 28% bracket and a list of cesses to be levied on different kinds of automobiles has also been declared by the Indian government which is ranging from 1% to 22%.

GST and cess rate on automobiles based on fuel type

Vehicle category	GST rate (%)	Compensation cess (%)
EVs	5	Nil
Hydrogen fuel cell vehicles	12	Nil
Passenger vehicles (petrol, CNG, LPG) up to 4m in length and up to 1200 cc engine	28	1
Passenger vehicles (diesel) up to 4m in length and up to 1500 cc engine	28	3
Passenger vehicles (up to 1500 cc engine)	28	17
Passenger vehicles (above 1500 cc engine)	28	20
Passenger vehicles popularly known as SUVs (above 4m in length, above >1500 cc engine and >170 mm ground clearance)	28	22
Hybrid passenger vehicles (up to 4m and up to 1200 cc engine petrol) or (up to 4m and up to 1500 cc engine diesel)	28	Nil
Hybrid passenger vehicles (Above 4m or above 1200 cc engine petrol or above 1500 cc engine diesel)	28	15

Source: SIAM, CRISIL MI&A

Import duty on cars

Import duty (also known as import tax, import tariff or customs duty) is an indirect tax levied by Indian authorities on goods purchased from a foreign country. Through import taxes, the price of imported goods increases and demand decreases. This propels domestic market growth, demand for indigenous products and protects Indian OEMs from foreign competitors.

Customs duty on automobiles based on fuel type

Criteria	Engine capacity	Fuel type	Import duty (%)
Used car import	Any	Any	125
Cars CBUs whose CIF value is more than \$ 40,000	>3000 cc	Petrol	100
	>2500 cc	Diesel	
Cars CBUs whose CIF value is less than \$ 40,000	<3000 cc	Petrol	70
	<2500 cc	Diesel	
ICE vehicle SKD: CKD containing engine or gearbox or transmission mechanism in a pre-assembled form but not mounted on a chassis or a body assembly	Any	Any	35
ICE vehicle CKD: CKD containing engine, gearbox and transmission mechanism not in a pre-assembled condition	Any	Any	15

Criteria	Engine capacity	Fuel type	Import duty (%)
EV SKD: Pre-assembled battery pack, motor, motor controller, charger, power control unit, energy monitor contractor, brake system, electric compressor not mounted on chassis	NA	Electric	30
EV CKD: Disassembled battery pack, motor, motor controller, charger, power control unit, energy monitor contractor, brake system, electric compressor not mounted on chassis	NA	Electric	15

Note: CIF: Cost, insurance and freight, CBU: Completely built-up, SKD: Semi-knocked down, CKD: Completely knocked down

Source: [SIAM](#), CRISIL MI&A

The government recently launched a scheme to promote electric passenger cars in India under which import duty concession is offered for OEMs who have set up domestic manufacturing facility in India with a minimum investment of \$ 500 million. Under this scheme, the imported vehicles would attract a reduced customs duty of 15% with maximum CIF value of \$ 35,000.

Corporate Average Fuel Efficiency/Economy norms

Corporate Average Fuel Economy (CAFE) norms aim to reduce fuel consumption by vehicles (or improve fuel efficiency) by lowering carbon dioxide (CO₂) emissions, hence reducing reliance on oil and regulating pollution. Implemented in India on April 1, 2017, CAFE norms apply to petrol, diesel, LPG and CNG fuelled vehicles. In phase 1 (2017-2022), CAFE norms required average corporate CO₂ emissions to be less than 130 g/km by fiscal 2022 and below 113 g/km thereafter (CAFE II), i.e. vehicles needed to be 10% more fuel-efficient by fiscal 2022. CAFE II norms came into effect on April 1, 2023. This is expected to incentivise the shift towards greener technologies such as hybrids and EVs. The Energy Conservation Bill requires carmakers to pay Rs 25,000 per unit if their fleet's CO₂ emissions exceed the intended CAFE score of 0-4.7 g/km, and Rs 50,000 per unit if they exceed by more than 4.7g/km.

National Green Hydrogen Mission

The National Green Hydrogen Mission is a comprehensive action plan for establishing a green hydrogen ecosystem in India. The policy is aimed at making India a leading producer and supplier of green hydrogen in the world, thereby creating export opportunities for green hydrogen and its derivatives. The policy, which promotes hydrogen as a clean energy source, was approved by the Indian government with an outlay of Rs 1,97,000 million in January 2023. Of this, Rs 1,74,900 million is allotted for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs14,660 million for pilot projects, Rs 4,000 million for research and development (R&D) and Rs 3,880 million for other mission components. Under the SIGHT programme, the government offers incentives for manufacturing of electrolyzers and production of green hydrogen. By 2030, the government wants to increase its annual hydrogen production capacity to 5 million tonne. The National Green Hydrogen Mission aims to reduce India's dependence on fossil fuels imports, lower greenhouse gas emissions, transition the economy to low carbon intensity and make the country a leader in this new industry. The government plans to achieve this by setting up green hydrogen plants and encouraging R&D in the sector. The government has also invested Rs 350 billion in the energy transition to attain the goal of net-zero carbon emissions by 2070.

Ethanol blending in India

The government is promoting the use of ethanol as a renewable and environment-friendly fuel in petrol. The ethanol blending programme is aimed at reducing the import dependence of fuels, savings in foreign exchange, boosting the domestic agriculture sector and associated environmental benefits. The Roadmap for Ethanol Blending in India 2020-25 lays out an annual plan to increase domestic ethanol production in line with the target of National Policy on

Biofuels (2018) to reach a blending of 20% of ethanol in petrol (E20) by 2025-2026. The roadmap aims at phased rollout of ethanol blended fuels in India with E10 fuel by April 2022, and phased rollout of E20 from April 2023 to April 2025. The government is ambitious of attaining 20% ethanol-blended petrol by fiscal 2025 and 30% by fiscal 2030. Further the policy mandates the rollout of vehicles that are E20 material-compliant and E10 engine-tuned vehicles from April 2023. Further, it mandates the production of E20-tuned engine vehicles from April 2025. OMCs (oil marketing companies) have already rolled out E20 fuel in a phased manner in April 2023 but are yet to achieve widespread availability.

BS-IV to BS-VI transition

Bharat Stage (BS) emission standards are issued by the central government to regulate the output of air pollutants from motor vehicles. In January 2016, the government decided to skip BS-V and instead implemented BS-VI norms directly after BS-IV. It fixed the deadline of April 1, 2020 for the introduction of BS-VI emission norms.

BS-VI regulations demand major reduction in PM and NOx levels

Type of Vehicle	Unit	BS IV	BS VI	Change
Diesel				
HC	gm/km	0.3	0.17	-43%
NOx	gm/km	0.25	0.08	-68%
PM	gm/km	0.025	0.0045	-82%
Petrol				
NOx	gm/km	0.08	0.06	-25%
PM	gm/km	-	0.0045	Newly added

NOx: Nitrous oxide

Source: CRISIL MI&A

Prices of BS-VI-compliant PVs increased 2-4% as devices and systems were added to reduce emission levels. The price hike was higher for diesel vehicles as these require additional exhaust parts.

Addition of devices and sub-systems in BS-VI-compliant vehicles

Pollutant	Devices / Subsystems to be included to reduce the Pollutants
NOx- Nitrous oxide	<ul style="list-style-type: none"> Exhaust Gas Recirculation Selective Catalytic Reduction 3 way catalyst Lean NOx Trap
HC- Hydrocarbons	<ul style="list-style-type: none"> Secondary Air Injection 3 way catalyst Diesel Oxidation Catalyst Purge Control Valve Canister
PM- Particulate matter	<ul style="list-style-type: none"> Diesel Particulate Filter Gasoline Particulate Filter

Source: CRISIL MI&A

In November 2022, the European Commission presented a draft proposal on Euro 7 Emission Norm to the European Parliament. According to the same, Euro 7 pollution standards for new cars and vans will be implemented from July 2025, and for buses and lorries from 2027. India follows the matured European market for framing and implementation of policies and adapts it to suit Indian conditions. Provided Euro 7 comes into force from 2025, India is highly likely to propose BS-VII regulation by the end of this decade.

3. Review of and outlook on the Indian two-wheeler industry

3.1. Review of Indian two-wheeler industry (fiscal 2019 to 2024)

India is the largest motorised two-wheeler market in the world, with domestic sales of 18.4 million units in fiscal 2024. Two-wheeler sales constituted 73% of the total automobile market, which includes two-wheelers, three-wheelers, passenger vehicles (PVs), commercial vehicles (CVs) and tractors by volume in fiscal 2024. The passenger vehicle segment contributed about 17% to the Indian automobile industry, while CVs contributed about 4% and three-wheelers and tractors contributed 3% each.

The two-wheeler segment sees a healthy demand in India and is preferred over four-wheelers by the majority of the Indian population, especially for their regular commute. This is primarily due to the lower acquisition cost, higher mileage, lower maintenance cost, ease of navigation especially during rush hours, hassle-free parking and suitability of two-wheelers on rough roads.

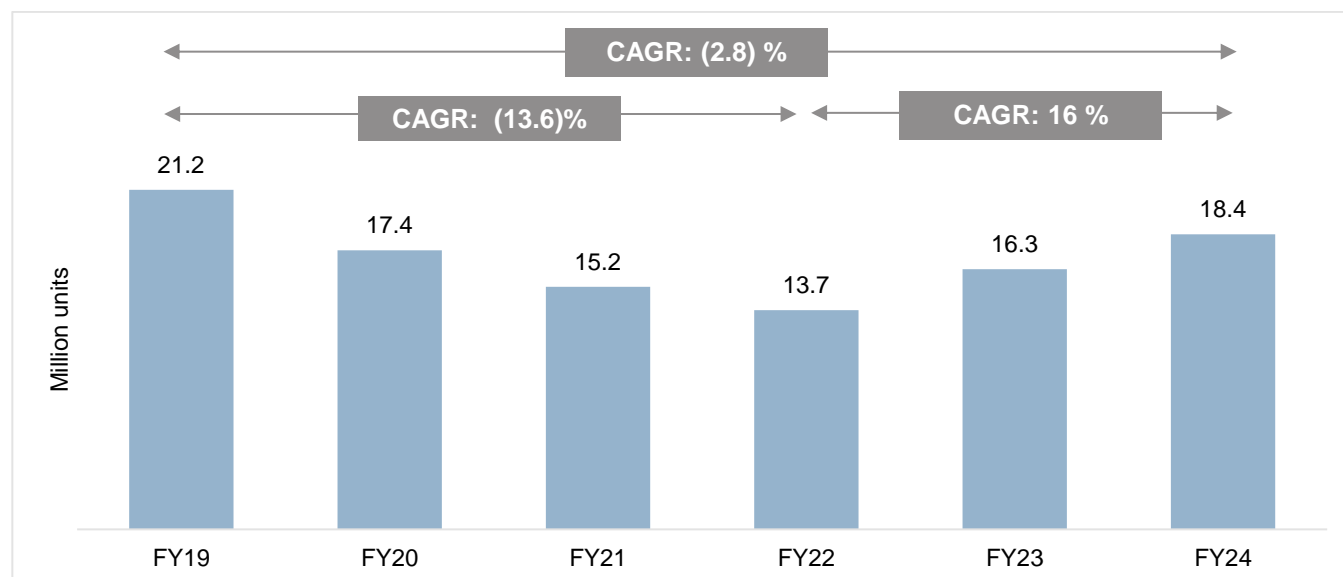
In the past 15 years, the domestic two-wheeler industry has clocked a CAGR of 6.2% to reach a volume of 18.4 million in fiscal 2024. In fact, until fiscal 2019, the industry has accelerated at a much faster pace of 11.1% CAGR and reached a historic high of volumes of 21.2 million.

During fiscal 2009 to fiscal 2019, India's GDP as well as private final consumption expenditure grew at a healthy pace of 7% CAGR. Moreover, inflation levels were on a tapering trend reaching ~3% levels in fiscal 2019. This favourable macro-economic environment led to an increase in disposable incomes and gave a thrust to the industry growth over the decade. In addition, the expansion in vehicle portfolio by OEMs, the accelerated growth in the scooter segment and the healthy growth of the premium motorcycle (≥ 125 cc) sub-segment provided an additional support to the industry growth over the decade. Moreover, vehicle prices rose at a nominal level of 3-5% over the period limiting the rise in acquisition costs for the customers.

These favourable factors helped the two-wheeler industry reach a historic high of 21.2 million volumes in fiscal 2019. These record sales were despite the higher-than-normal price rise (due to BSIV implementation in fiscal 2018) as well as the GST implementation (fiscal 2018) and demonetisation (fiscal 2016) that limited growth of the industry.

However, over the next four years, from fiscal 2019 to fiscal 2022, the industry witnessed a contraction at a CAGR of 13.6% as the pandemic, nationwide lockdowns, reduced mobility, unfavourable macroeconomic scenario, closure of schools, colleges and offices, and work from home impacted the demand for two-wheelers.

Domestic two-wheeler sales volume trend – fiscals 2019 to fiscals 2024



Note: Figures in bracket to be read as negative (E.g. (10) to be read as minus 10), data for ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

From the reduced base of fiscal 2022, two-wheeler sales rebounded in fiscal 2023 and recorded a healthy growth of 19%, driven by improving demand sentiments and the normalisation of economic activities and increased mobility. The pent-up demand due to the postponement during the pandemic period and a sharp rise in scooters demand with restarting of colleges and offices provided a boost to the industry demand. Despite the normalisation of public transport, improved frequency of intracity bus and railway services, the demand for the last mile mobility, and in turn the demand for two-wheelers remained buoyant during the year.

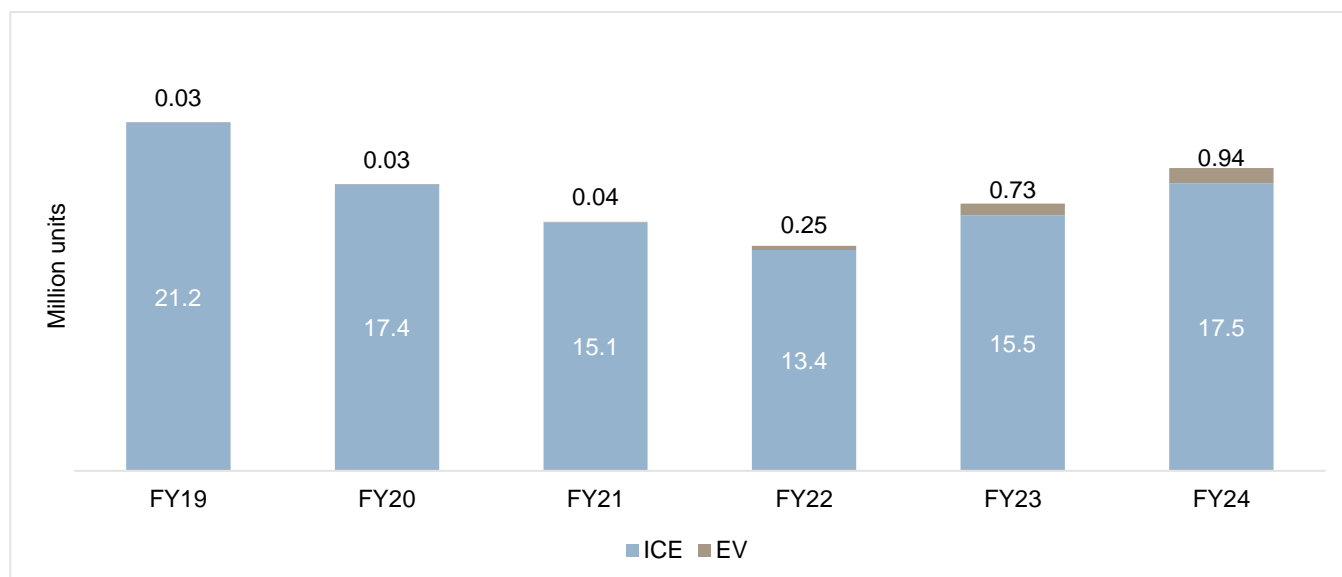
In addition, the retail sales of the two-wheeler segment almost tripled during the year, providing an additional boost to the overall sales in fiscal 2023.

However, the higher interest outgo with increased repo rates and further increase in vehicle prices restricted the growth of the two-wheeler industry sales in fiscal 2023.

In fiscal 2024, the two-wheeler industry's sales grew by a further 13%, supported by further improvement in the macroeconomic scenario, rural support, continued traction for premium motorcycles as well as scooters. In addition, continued demand for electric two-wheelers despite the subsidy cut¹ supported the growth in fiscal 2024. The new launches, especially in the premium segments provided an added support to the demand. The commuter motorcycle segment also witnessed some improvement during the year after consecutive contractions aided by limited rise in operating costs as well as increased customer incentives.

¹ The Ministry of Heavy Industries (MHI) had decided to slash the FAME II subsidy of electric two-wheelers (effective from June 2023) to Rs 10,000 per Kwh from the Rs 15,000 per Kwh. Apart from reducing the per Kwh incentive by Rs 5,000, the ministry also reduced the maximum subsidy cap of 40 per cent of the ex-factory price of the vehicle to 15 per cent.

Domestic two-wheeler sales volume trend (ICE vs EV)

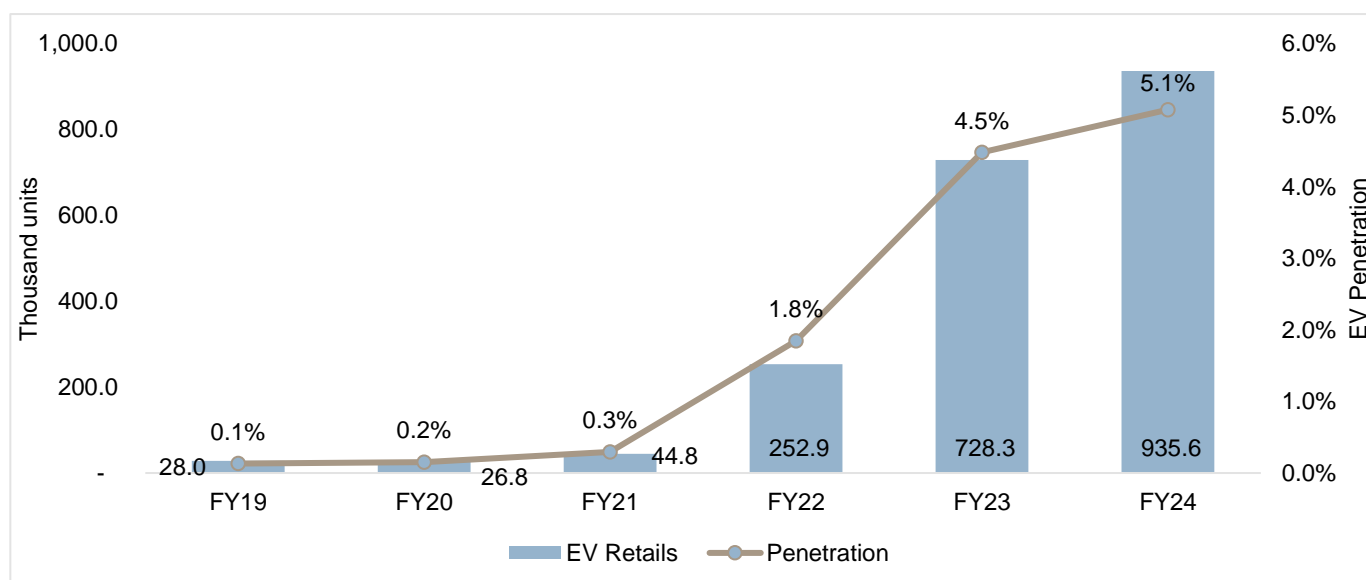


Source: SIAM, VAHAN, CRISIL MI&A

y-o-y growth	FY19	FY20	FY21	FY22	FY23	FY24	FY19-24 CAGR
ICE	5%	-18%	-13%	-11%	16%	13%	-4%
EV	1394%	-4%	67%	464%	188%	29%	102%

Source: SIAM, VAHAN, CRISIL MI&A

E-2W Retails and Penetration trend – fiscals 2019 to 2024



Note: Only high-speed electric two wheelers have been considered for the analysis

Source: SIAM, SMEV, VAHAN, CRISIL MI&A

Over the past five years, the electrification within the industry has provided a boost to the industry sales. During these years (since FY19), when the ICE vehicle sales declined, the sharp rise in EV retails restricted the drop in

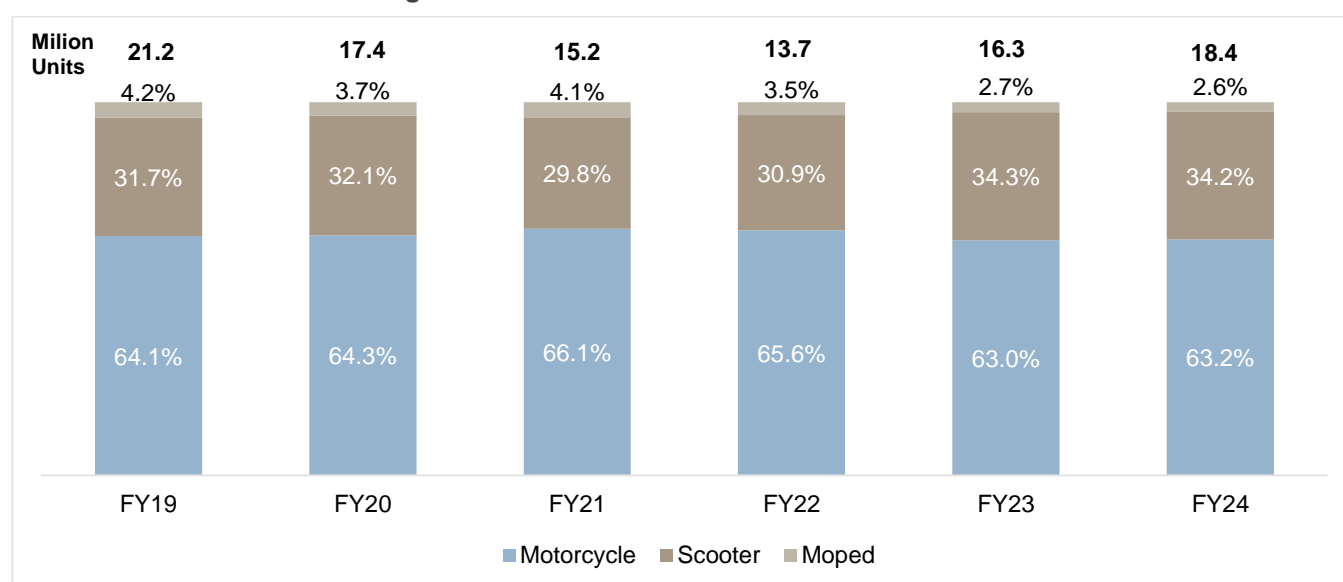
industry sales volumes. From fiscal 2019 to fiscal 2024, the ICE segment contracted at a CAGR of 3.7% and EV retails skyrocketed at a CAGR of 101.7%, albeit from a lower base, which arrested the drop in the industry sales.

Segment wise domestic sales trend

Motorcycles dominate the domestic two-wheeler industry sales with more than 60% contribution to the annual domestic sales. However, their contribution has gradually contracted over the years, from 78% in fiscal 2009 to 63% in fiscal 2024.

On the other hand, the scooter segment expanded its presence over the long-term horizon, from 15% in fiscal 2009 to 34% in fiscal 2024. The moped segment also lost some ground to scooters over the years, from around 6% share in fiscal 2009 to ~3% in fiscal 2024.

Domestic two-wheeler sales segmental trend – fiscals 2019 to 2024



Note: Data includes ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

CAGR for Domestic two-wheeler sales segmental trend – fiscals 2019 to 2024

y-o-y growth	Motorcycle	Scooter	Moped
FY19-24 CAGR	-3.0%	-4.3%	-11.4%

Note: Data includes ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

1.1.1.1 Scooters

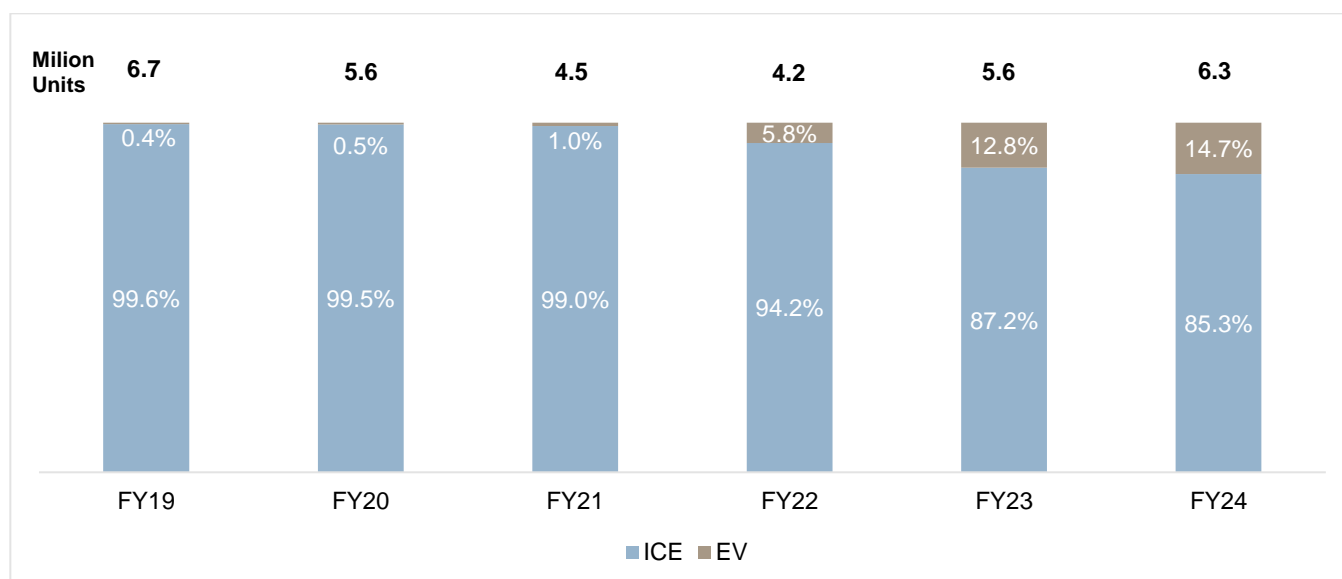
Over the past five years, the share of scooters increased from 31.7% in fiscal 2019 to 34.2% in fiscal 2024. The share of the scooter segment increased on the back of strong demand from new model launches (such as the Dio 125, Avenis, upgrades of Activa, Jupiter as well as e-scooters), increasing use of scooters by working women in urban areas (due to high convenience) and a growing preference as a second vehicle in households. There has been an increase in multiple vehicle ownership, including a passenger vehicle, and multiple two-wheelers in a single family, driving demand.

The scooter also gained acceptance in rural areas as road penetration increased and it became a utility vehicle. Earlier, the scooter was positioned primarily as an urban vehicle. Now, it has gradually evolved to become a preferred means of commuting for women in rural areas as well.

During the industry slowdown from fiscal 2019 to fiscal 2024, the overall scooter segment contracted at the slowest pace of 1.3% CAGR, compared with 3% CAGR contraction for motorcycles and 11.4% CAGR contraction for mopeds. A sharp rise in e-scooter sales and new model launches, especially in the premium (≥ 125 cc) scooter segment restricted the drop in scooter sales.

During the pandemic, the reduced need for mobility due to lockdowns, closure of schools/ colleges and offices impacted the scooter demand significantly. Sales of scooters (ICE+ EV) witnessed a sharp drop of 19% in fiscal 2021 and a further drop of 6% in fiscal 2022. However, scooter sales rebounded in fiscal 2023, led by the reopening of offices, schools and colleges. The pent up demand from the past two years provided a boost to the sales of scooters. In addition, the increased retails of e-scooters also gave an additional boost to the scooter sales. The scooter segment grew at a faster pace of 32% year-on-year, compared with 14% growth witnessed in motorcycles, thus backing the share expansion of scooters in fiscal 2023. In fiscal 2024, both motorcycles and scooters increased at a healthy pace of around 14% keeping the share near steady.

ICE vs EV split within domestic scooter sales – fiscals 2019 to 2024



Note: EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

Within the scooter segment, EV scooters witnessed growth at an accelerated pace and contributed a sizeable share of 14.7% to the overall scooter sales in fiscal 2024. The launch of new models, government incentives, rising awareness, increased acquisition and operating costs of the ICE equivalents gave a boost to the EV sales during fiscal 2019-2024. The EV scooters clocked a CAGR of 101% in the past five years, and their penetration within the scooter segment rose from 0.4% in fiscal 2019 to 14.7% in fiscal 2024.

On the other hand, the ICE scooter segment witnessed contraction amid the reduced mobility, increased vehicle prices (due to BS VI compliance), higher operating costs (fuel price hike), increased interest outgo as well as increased competition from EVs. From fiscal 2019 to fiscal 2024, ICE scooter sales contracted at a CAGR of 4.3%.

Even within ICE scooters, the dominant 110 cc scooter segment (80% share in fiscal 2019) saw a sharp decline at a CAGR of 11.5%. The customer base of 110 cc scooters is relatively price conscious. Increased ownership and operating costs as well as reduced usage requirements during the pandemic years, led to a significant postponement of purchases by this customer segment. In addition, the shift towards premium ICE scooters (≥ 125 cc) as well as EVs exacerbated the situation for the 110 cc ICE scooters. In turn, their share within the ICE scooter segment, slid from ~80% in fiscal 2019 to 53% by fiscal 2024.

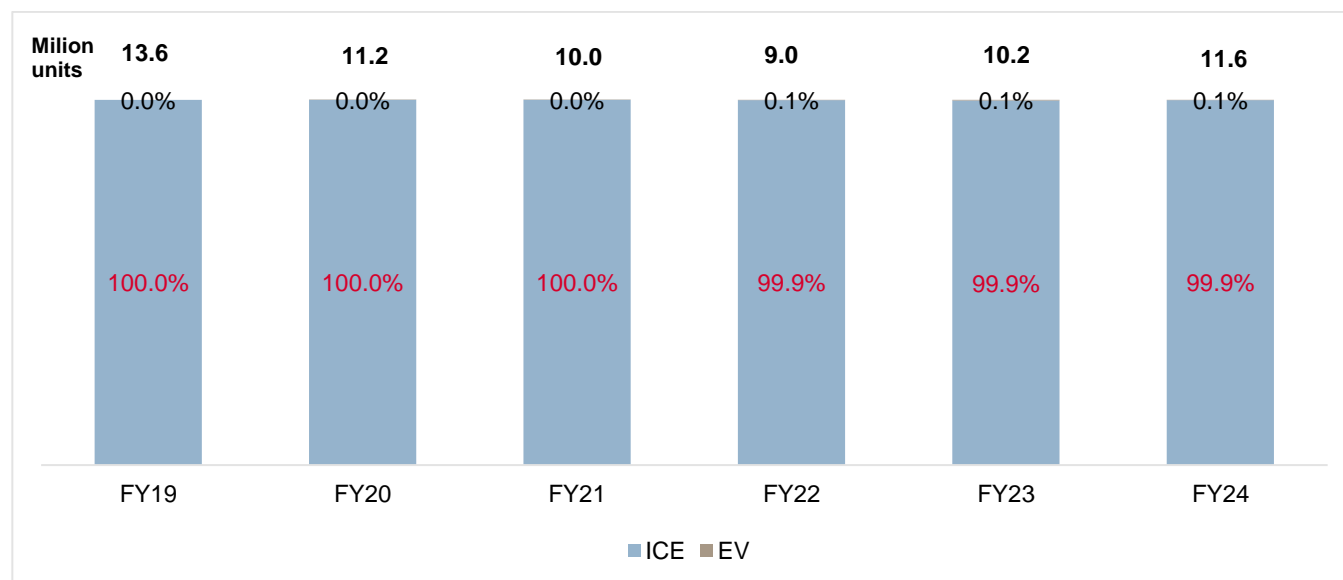
In contrast, the premium scooter (≥ 125 cc) segment, clocked a 12% CAGR over the period, albeit from a smaller base. A relatively price agnostic customer base, feature-rich attractively designed vehicles, young buyers who prefer high performance and advanced features, auto OEM focus, multiple vehicle launches and premiumisation trend aided the growth of this segment. The share of premium scooters in the ICE scooter segment rose from about 20% in fiscal 2019 and to 47% in fiscal 2024.

1.1.1.2 Motorcycles

In the overall domestic sales, motorcycles have maintained their leading position in the past five years, but lost some ground to scooters in the same period. During the pandemic (fiscal 2021 and fiscal 2022), the reduced requirement of scooters and the continued requirement of motorcycles, especially for daily commuting in the absence of public transport, supported the demand for motorcycles and limited their decline.

During the pandemic, the availability of public transportation was limited, even the shared mobility options, including office buses and taxis were restricted making personal vehicles, including motorcycles, the primary option for daily commute, especially for the blue-collar workers and rural customer base. Relatively prosperous customers, women commuters especially from urban background took advantage of the work-from-home option or their four-wheeled vehicles limiting the need for scooters during this period. This aided the moderate market share expansion during fiscal 2021. Post pandemic, improving mobility and gradual rise in demand for scooters caused the share of motorcycles to contract in the next three fiscals, reaching 63% by fiscal 2024.

ICE vs EV split within domestic motorcycles sales – fiscals 2019-2024



Note: EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

Unlike scooters, the EV penetration within motorcycles has remained insignificant due to a lack of EV options. A few OEMs, such as Revolt, offered EV motorcycles from fiscal 2020. Manufacturers such as Tork and Ultraviolette also introduced their e-bikes/ motorcycles in the next two to three years. However, given the limited vehicle options, even in the premium motorcycles category, higher acquisition costs, larger range anxiety concern due to higher daily running for motorcycles; the adoption of EVs within motorcycles was only gradual and reached only 0.1% of overall motorcycle sales by fiscal 2024. Moreover, the ICE variants continue to dominate the motorcycle sales. However, even within the ICE motorcycles, the premium motorcycle segment (≥ 125 cc) has witnessed a CAGR of 3% during fiscal 2019-2024 period while the commuter motorcycle segment (≤ 110 cc) contracted at a rapid pace of 8% CAGR.

The price-sensitive commuter segment (62% share in fiscal 2019) has been under pressure amid the sharp rise in vehicle prices due to emission and safety norms, increased insurance costs, hike in fuel prices, escalated interest costs, coupled with pressure on the incomes of this customer segment, especially during the pandemic. The commuter motorcycle segment witnessed three years of consecutive contraction between fiscal 2020 to fiscal 2022 (16% CAGR drop till fiscal 2022).

On this lowered base, the commuter motorcycle segment saw some growth in fiscals 2023 and 2024 aided by the pent-up demand and added support from OEMs in the form of discounts and other incentives. However, for the complete five-year period, the commuter motorcycle segment witnessed contraction at 8% CAGR.

On the other hand, the premium motorcycle segment logged a CAGR of 3%, backed by lower impact of the pandemic on the financially stable customer base, higher OEM focus with increased vehicle launches, feature-rich and attractive vehicle introductions, and entry of global players such as Harley, and Triumph with India-focussed models into the premium motorcycle segment. High performance tech-enabled vehicles see higher acceptance among the rising younger buyer base who view vehicle as an extension of their personality. Thus, the share of premium motorcycles, within the ICE motorcycles, increased from 38% in fiscal 2019 to 52% in fiscal 2024.

Segmental growth within the industry in the past five years

Segment	FY19-FY24 CAGR	FY19 share	FY24 share
Motorcycles	(3.0) %	64.1%	63.2%
ICE	(3.1) %	64.1%	63.1%
EV	NM	0.0%	0.1%
Scooters	(1.3) %	31.7%	34.2%
ICE	(4.3) %	31.6%	29.2%
EV	101.3%	0.1%	5.0%
Mopeds	(11.4) %	4.2%	2.6%
Total	(2.8) %	100%	100%

Note: NM: Not meaningful; Figures in bracket to be read as negative (Eg. (10) to be read as minus 10), EV retail data from VAHAN have been considered.

Source: SIAM, CRISIL MI&A

The smallest segment of mopeds witnessed a contraction during fiscal 2019-2024, amid the increasing adoption of scooters in the semi-urban and rural markets — historically major markets for the moped — led to a loss of market share for mopeds. Limited product portfolio and no new launches also impacted the sales of this segment. Moreover, the pressure on the income of the bottom of the pyramid customer base of mopeds as well as increased operating expenses due to increased fuel costs, higher interest outgo; demand for the segment got impacted. As a result, the share of mopeds dropped from 4.2% in fiscal 2019 to 2.6% in fiscal 2024.

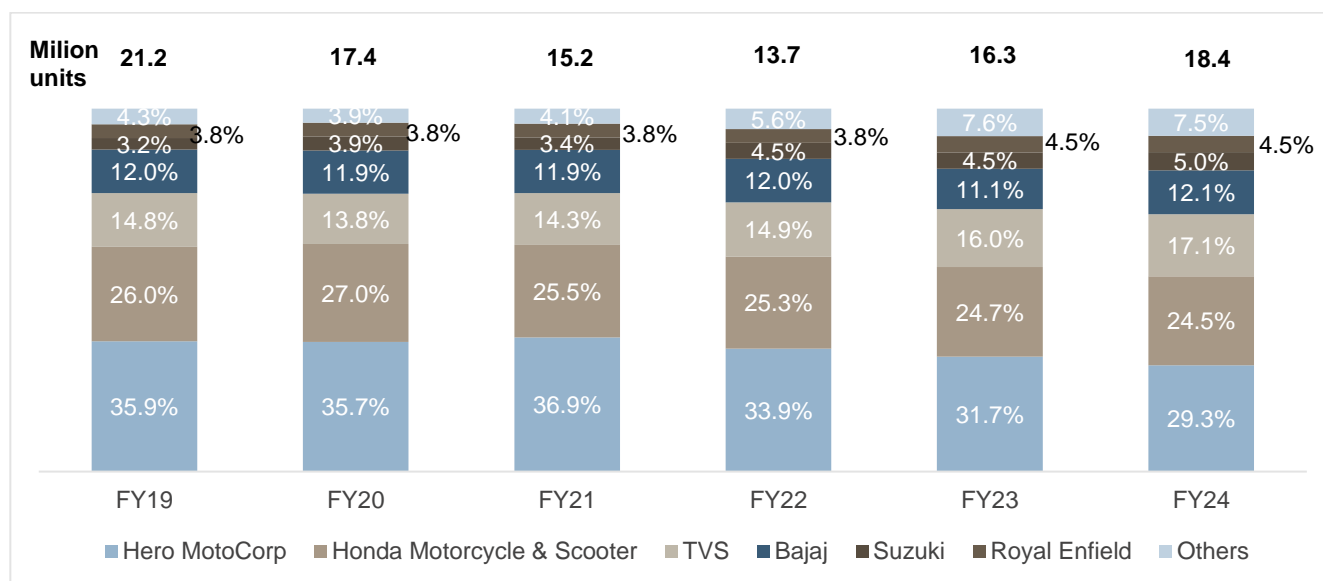
Competitive landscape of the domestic two-wheeler industry

India's two-wheeler industry is an oligopolistic market with the top four players contributing more than 80% of the annual sales. However, over the years, the competition has intensified within the industry, especially, with the entry of new age startups such as Ola, Ather, and Okinawa, catering to the fast-expanding segment of EVs. In fact, the contribution of the top four OEMs has decreased from 89% in fiscal 2019 to 83% in fiscal 2024.

Hero MotoCorp (HMCL) continues to lead the market, although HMCL's contribution has declined from ~36% in fiscal 2019 to 29.3% in fiscal 2024. The increased traction for scooters, including e-scooters as well as premium motorcycles, coupled with pressure on commuter motorcycles sales — where HMCL dominates — have impacted its

share. The second largest contributor, Honda Motorcycle & Scooter (HMSI), has also lost some ground to other players, especially the e-scooter manufacturers.

OEM wise contribution to overall two-wheeler domestic sales – fiscals 2019 to 2024



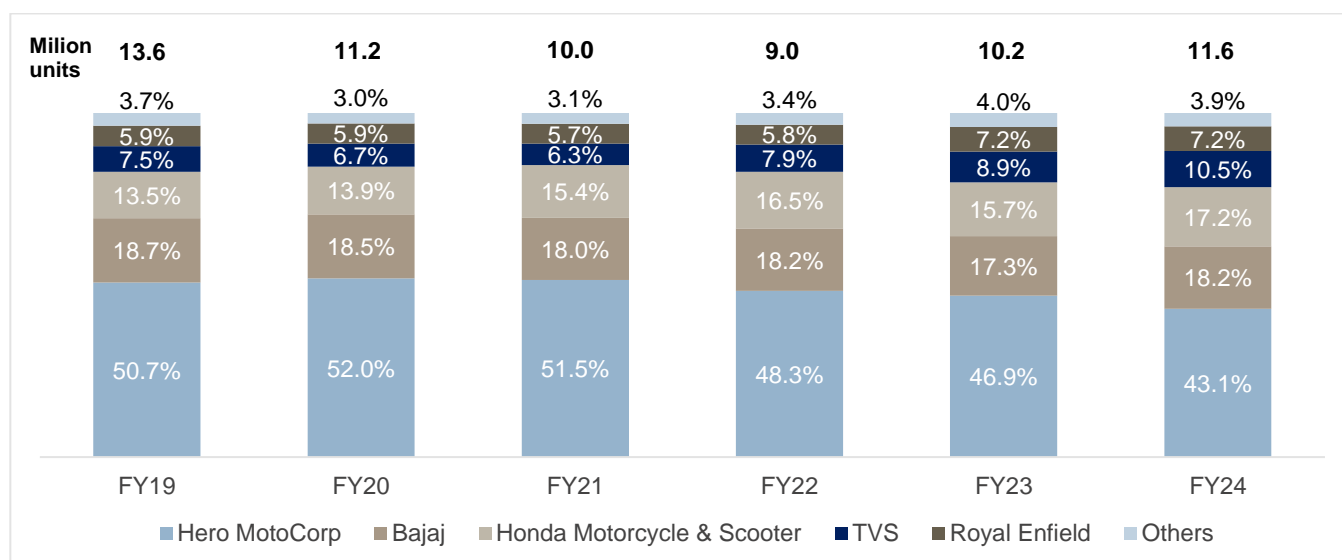
Note: Data includes ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

With the continued traction of its premium motorcycles and scooters, especially Jupiter, coupled with the growing adoption of its e-scooter model iQube, TVS has gained further ground in the market during the period. Bajaj has successfully maintained its ~12% share over the past five years. Multiple launches in the premium motorcycle segment and increase in production and sales of its Chetak e-scooters have aided its sales. Rising sales of premium scooters backed Suzuki's share expansion, while multiple launches in the growing premium motorcycle segment led to share expansion for Royal Enfield.

Recent entrants such as Ola and Ather have also grabbed notable share from the legacy OEMs led by the rising electrification within the domestic two-wheeler market. As of fiscal 2024, Ola and Ather contributed 2% and 1%, respectively to two-wheeler annual domestic sales.

OEM wise contribution to domestic motorcycle sales - fiscals 2019 to 2024



Note: Data includes ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

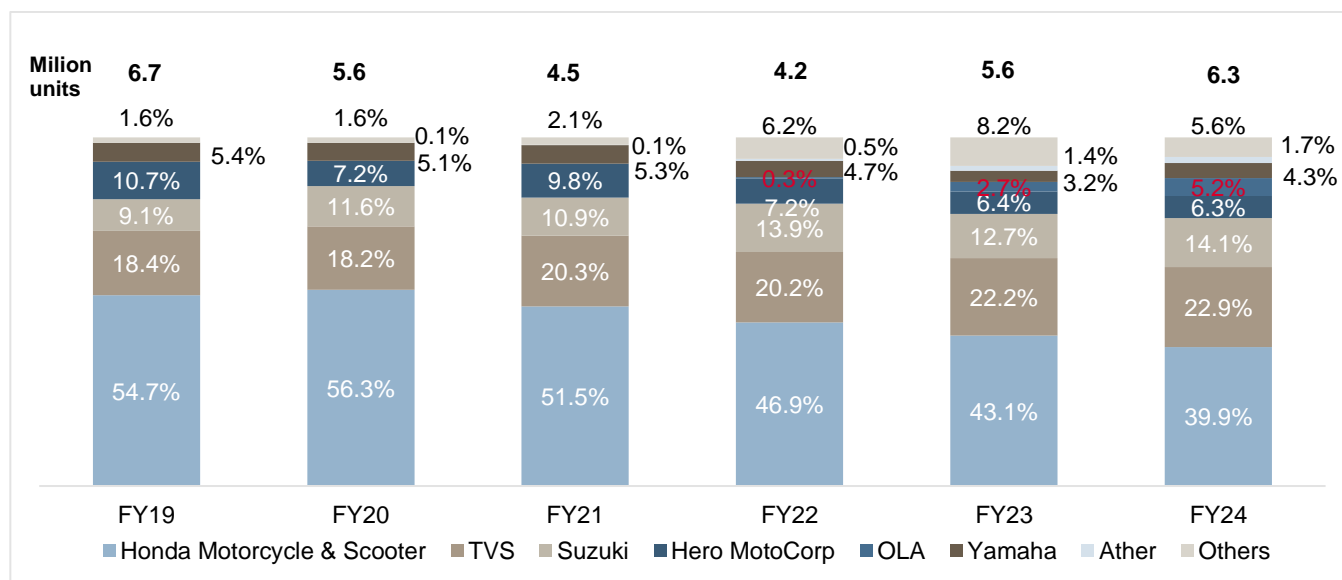
The overall motorcycle segment is dominated by HMCL, which is also the leader in the commuter motorcycle segment. However, given the pressure on sales of the commuter motorcycle segment and intensifying competition in premium motorcycles, HMCL lost some ground to TVS, HMSI and Royal Enfield from an initial high base. Although HMCL witnessed some contraction in commuter motorcycles, the increased traction for its premium models such as the XPulse, Xtreme as well as demand for its recent launches such as the Karizma, Harley X440 in the premium motorcycle segment restricted the contraction in its share.

Bajaj maintained its second position in the market in the past five years with continued traction for its motorcycles, especially for its Pulsar range, and increased demand for its latest launches, including the Triumph vehicles. HMSI has expanded its presence in the motorcycles market amid continued demand for its models such as Shine 125, SP 125 coupled with its entry into the 100 cc category with Shine 100. The launch of the SP160 model also aided its share expansion in fiscal 2024.

In line with HMSI, TVS has also grabbed additional share in the motorcycle segment supported by high demand for its Raider 125 model coupled with increased push from its recent launch, the Ronin, in the premium segment. TVS also witnessed a contraction in the commuter segment due to lower demand for the segment and the premiumisation trend in the two-wheeler industry.

Royal Enfield, with its entire focus on the premium motorcycle segment continued to strengthen its presence further with faster growth in the premium segments. Moreover, increased support from the competitively priced model the Hunter 350 aided its growth in the past two years.

OEM wise contribution to domestic scooter sales - fiscals 2019 to 2024



Note: Data includes ICE and EVs; EV retail data from VAHAN have been considered.

Source: SIAM, VAHAN, CRISIL MI&A

HMSI leads the scooter segment with its Activa model. Amid intensifying competition, the company has lost ground to TVS, Suzuki as well as the recent entrants OLA and Ather. However, an increase in demand for the premium variants of its scooters Activa 125 and Dio 125 helped the company limit its share contraction.

Increased traction for its iQube e-scooter and additional support from the premium variant of its popular Jupiter model helped TVS expand its share in the scooter segment.

Suzuki is primarily focussed on the premium scooter segment. Premiumisation within the industry as well as healthy demand for its recent launch, the Avenis, aided Suzuki's share expansion in the scooter segment.

Amid the electrification trend, especially in the scooter subsegment, OLA and Ather gained a foothold in the overall scooter segment for a short span. With its leading contribution in the e-scooter subsegment OLA gained a significant share of 5.2%, and Ather contributed ~2% to the overall scooter segment in fiscal 2024. (The EV segment is covered in detail in later chapters).

Over the past five years, Yamaha has maintained its share in 3-5% range led by continued demand for its RayZR series. The recent launch of the Aerox scooter range has helped Yamaha expand its presence and regain some lost ground in fiscal 2024.

For the moped segment, TVS contributes the entire sales. TVS is the only OEM offering mopeds in the domestic market.

Exports

Between fiscals 2019 and 2024, two-wheeler exports logged a moderate 1% CAGR reaching 3.5 million in volume. Currently exports account for 15-20% of the overall two wheeler sales in India.

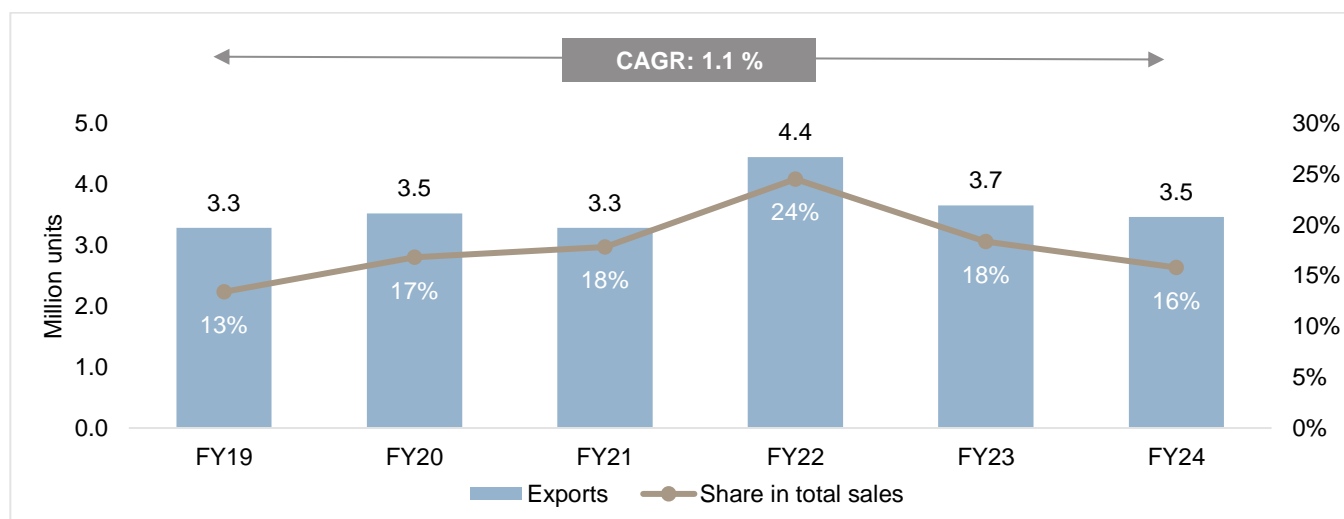
The growth was led by increase in global demand and entry into new markets by players such as Bajaj and TVS. Also, joint ventures with global brands — such as KTM, Husqvarna and BMW — and catering to the global demand of these brands from India has given an additional thrust to two-wheeler exports.

However, the tightening global monetary condition after the inflation spiral and forex unavailability limited the exports. Geopolitical conflicts have also been impacting the overseas demand.

During the six-year period, export volume remained almost steady at around 3.5 million with fiscal 2022 being an exception, when the shipments rose a healthy 24% as OEMs focused on exports amid a slowdown in the domestic market. The exports normalised in fiscal 2023, with increased demand from domestic markets. Its share in overall industry sales also regularised to normal 15-20% range.

In fiscal 2024, two-wheeler exports dropped a further 5% amid continued focus on rising domestic demand and slowdown in demand in major overseas markets of Africa and Asia.

Two-wheeler exports trend



Source: SIAM, CRISIL MI&A

Two-wheelers are primarily exported to developing countries from India with Africa accounting for a major share. However, exports to Africa have been under pressure amid the slowdown in the economy, a sharp rise in inflation and unavailability of forex in Nigeria, the leading two-wheeler importer from India. In fiscal 2024 (until February), the region's share in India's two-wheeler exports fell to 41% from 44% in fiscal 2023.

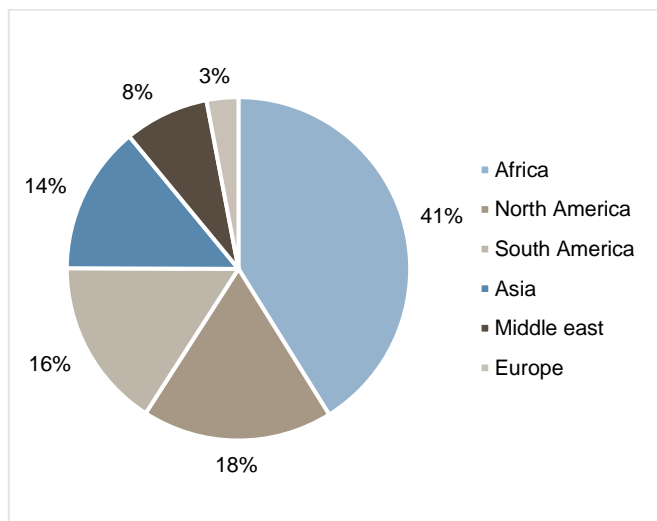
The higher exports to North American countries (share expanded 6% y-o-y), primarily Mexico, lent some support to exports in fiscal 2024. The increase in exports to Turkey aided the share of Middle East during the fiscal. Given the FTAs with countries such as Saudi Arabia and the UAE, the exports to the Middle East have been on the rise.

India also exports significantly Southeast Asian countries such as the Philippines, Indonesia and Taiwan as well as the neighbouring countries of Nepal and Bangladesh. Share of exports to the neighbouring countries also contracted in fiscal 2024 owing to the economic weakness in these countries. Continued exports to Indonesia have restricted the loss of share.

The popularity of scooters has increased in South Asian markets such as Thailand, Malaysia, Vietnam and Indonesia because of the vehicles' affordability, fuel efficiency and agility in navigating congested roads. These developing nations have limited per capita incomes making passenger vehicles unaffordable for a significant customer base. Moreover, scooters are favoured as a family vehicle which can be used in urban and rural areas for the daily commute as well as to haul small luggage to and from the market.

Additionally, the governments in these countries are also incentivising purchase of low emission and technologically advanced vehicles which align with environmental and safety goals set by the government.

Geographical split for Indian two-wheeler exports (fiscal 2024 YTD)



Country	Share in fiscal 2024 YTD
Nigeria	13.6%
Mexico	8.1%
Columbia	7.7%
Guatemala	4.9%
Uganda	4.8%
Guinea	4.6%
Philippines	4.5%
Turkey	4.4%
Tanzania	4.0%
Nepal	3.7%

Note: YTD: Until February

Source: Ministry of Commerce and Industry, CRISIL MI&A, SIAM

Segment-wise exports

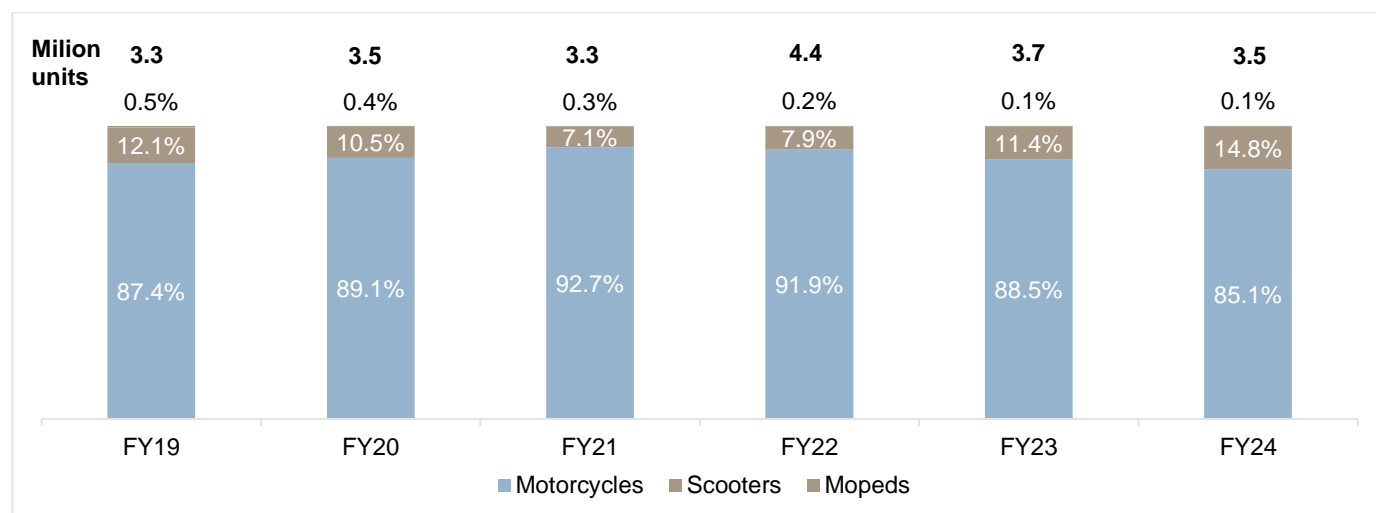
Motorcycles dominate the exports segment as well with more than 85% share in two-wheeler exports. However, they lost some ground to scooters, especially in the last 3 years.

Motorcycle exports registered a modest 1% CAGR during fiscals 2019-2024 while scooters clocked a faster 5% CAGR, albeit from a smaller base. Increased push from HMSI as well as TVS with further geographical expansion in Latin American and South East Asian countries aided the faster growth of scooter exports.

Even in fiscal 2024, while the exports of motorcycles contracted 9%, those of scooters rose nearly 23% on-year, restricting the overall contraction of exports.

Mopeds form an insignificant part of the two-wheeler exports. Their share contracted further during fiscals 2019-2024 with a 30% CAGR decline in exports .

Segmental split within exports



Source: SIAM, CRISIL MI&A

CAGR for segmental split within exports – fiscals 2019 to 2024

	Motorcycle	Scooter	Moped
FY19-24 CAGR	0.5%	5.1%	-30.4%

Source: SIAM, CRISIL MI&A

Demand drivers and trends in the domestic two-wheeler market

The performance of the Indian two-wheeler industry is dependent on numerous social and economic factors, including demographic trends and preferences, income levels, affordability of two-wheelers for customers, changes in government policies, overall economic conditions and the availability of finance and interest rates. Certain factors, such as general macroeconomic and consumer trends, have direct impact on the demand of two-wheelers.

According to the International Road Federation - World Road Statistics 2023 report, India had around 243 million two-wheelers in use in CY 2020 i.e. India had 175 two-wheelers for every 1,000 people. The two-wheeler penetration of India is much lower than that of many Southeast Asian countries such as Taiwan (592 two-wheelers per 1,000 people), Indonesia (423), Malaysia (406 – as of 2018) and Vietnam (613 – as of 2018).

Country	Two-wheeler penetration (per thousand people)
India	175
Brazil	136
Mexico	42
Indonesia	423
Malaysia	406*
Taiwan	592

Vietnam	613*
Korea	44
USA	25
China	51
Japan	82

Note: Data for 2020; *: Data for 2018

Source: International Road Federation- World Road Statistics 2023

This provides a sizeable headroom for the two-wheeler industry to grow going forward. Some of the key drivers aiding India's domestic two-wheeler industry demand are:

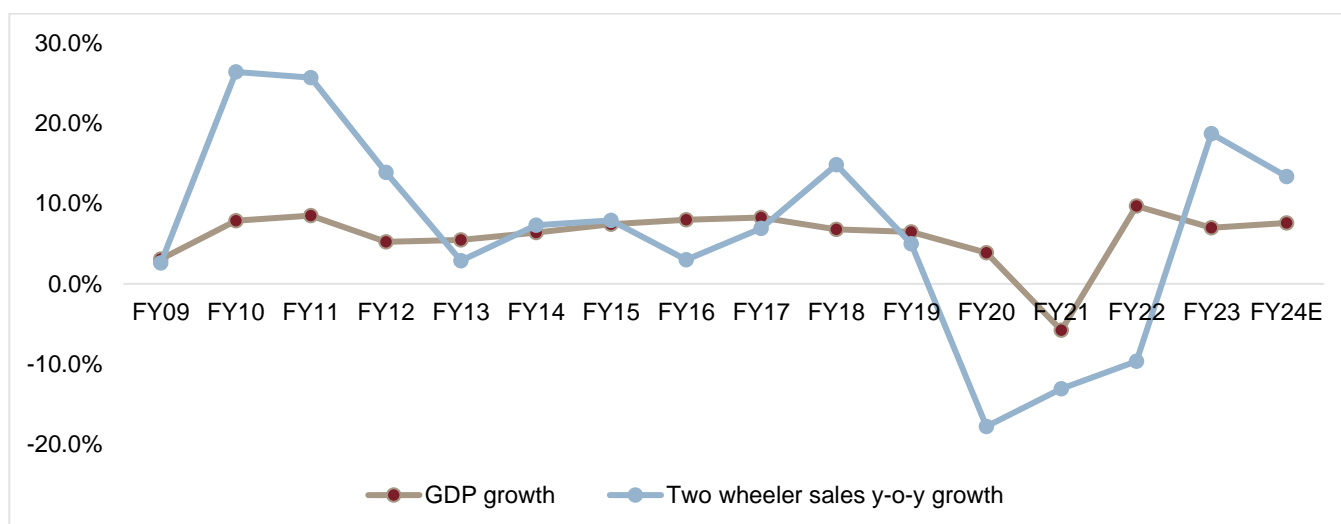
Macroeconomic support

The primary demand drivers for the two-wheeler industry are improving affordability and lower cost of acquisition and ownership. Macroeconomic factors primarily determine the disposable income and affordability for customers.

During the fiscal 2009 -2019 decade, India's GDP grew at a healthy pace of 7% CAGR, aiding the affordability of the customer base. The private final consumption expenditure also expanded in tandem with the GDP growth over the same period.

This improvement in income levels translated into a healthy growth for the domestic two-wheeler industry at a CAGR of 11%. The industry achieved this growth despite a few hurdles, including the demonetisation, the implementation of the Goods and Services Tax, as well as the implementation of BSIV norms, which pushed up the vehicle prices in fiscal 2018.

GDP vs two-wheeler industry growth trend



Source: MoSPI, SIAM, VAHAN, CRISIL MI&A

After this healthy growth, the slowdown in the GDP growth in fiscal 2020 and the pandemic-induced economic contraction in fiscal 2021 impacted the healthy run of the domestic two-wheeler industry further. The improvement in the macroeconomic scenario post the pandemic, with the reopening of the economy, has aided the two-wheeler sales growth in the past two years.

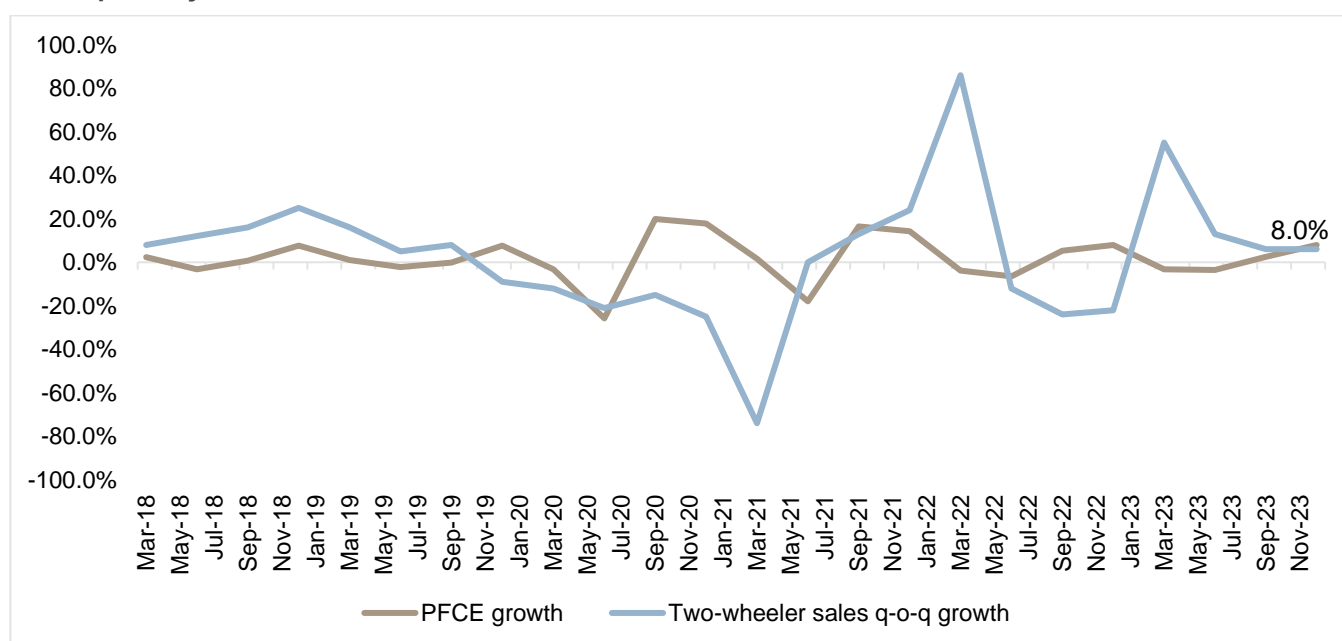
Going ahead, CRISIL expects India's GDP to clock a healthy 6.5-7.5% CAGR (till fiscal 2031), aiding the growth of domestic two-wheeler industry sales in the long-term.

Private consumption

Private final consumption expenditure (PFCE) reflects the overall consumption patterns and spending capacity of households in an economy. An increase in the measure often translates into higher demand for various goods and services.

PFCE marginally rose to 3.5% year-on-year in the third quarter of fiscal 2024 compared with 2.4% in the previous quarter but remained sluggish. Rural demand indicators were a mixed bag, with demand for work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) slowing this quarter, and growth in two-wheeler sales surging. However, growth in consumer non-durables production slowed considerably. Urban demand seemed to have sustained some momentum, with a pick-up in the growth of passenger vehicle sales, consumer durables production and continued double-digit growth in retail credit (18.1% versus 18.3% in the previous quarter). The latter indicates the impact of past rate hikes and regulations on unsecured lending are still pending.

PFCE quarterly trend



Source: Industry, SIAM, VAHAN, CRISIL MI&A

Rising rural incomes

Rural income growth is an important determinant of two-wheeler demand in India. Rural sales account for 55-60% of the overall domestic sales of two-wheelers.

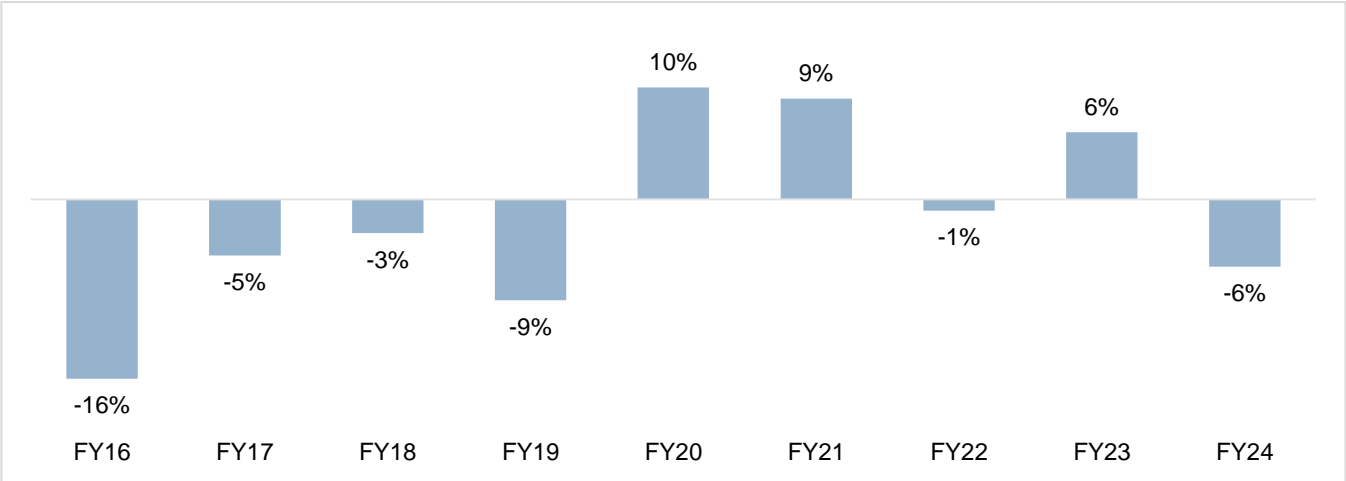
Improvement in rural infrastructure and road connectivity have helped the scooters segment to make inroads into the rural areas despite rural customers' preference for motorcycles. With rising electrification, a significant portion of EV demand is also coming from tier 3 and rural areas. So, the rural incomes have a direct bearing on the two-wheeler industry sales.

The rural areas are still primarily agrarian. With 86% of land holdings, small and marginal farmers dominate the country's agricultural sector. They rely on monsoon for water. Hence, its timely arrival and adequacy are crucial for a good crop. Any negative impact on crop supply owing to low rainfall has a cascading effect on the economy, as it leads to higher food prices and subsequently lower discretionary spending. As per the India Meteorological Department (IMD), monsoon deviation was 6% in fiscal 2023.

Monsoon has been favourable over the past few years with deviation staying in the acceptable range. Fiscal 2024 witnessed an uneven spread of rainfall during the initial months. Rabi output was favourable in fiscal 2023, supporting farmer income during the early months of fiscal 2024. In fiscal 2024, kharif sowing was initially delayed owing to delay in monsoon. However, sowing picked up in later. Moreover, higher minimum support price (MSP) this fiscal and good price in the mandis have maintained on-ground positivity.

In fiscal 2025, the IMD expects the monsoon to be normal, which is expected to boost the farm incomes in the short term.

Rainfall deviation trend



Note: If the rainfall average is within $\pm 10\%$ from its long period average (LPA) or 90% to 110% of LPA, the rainfall is said to be “normal”. The LPA for the June to September period is 868.6mm.

Source: IMD, CRISIL MI&A

Rural infrastructure

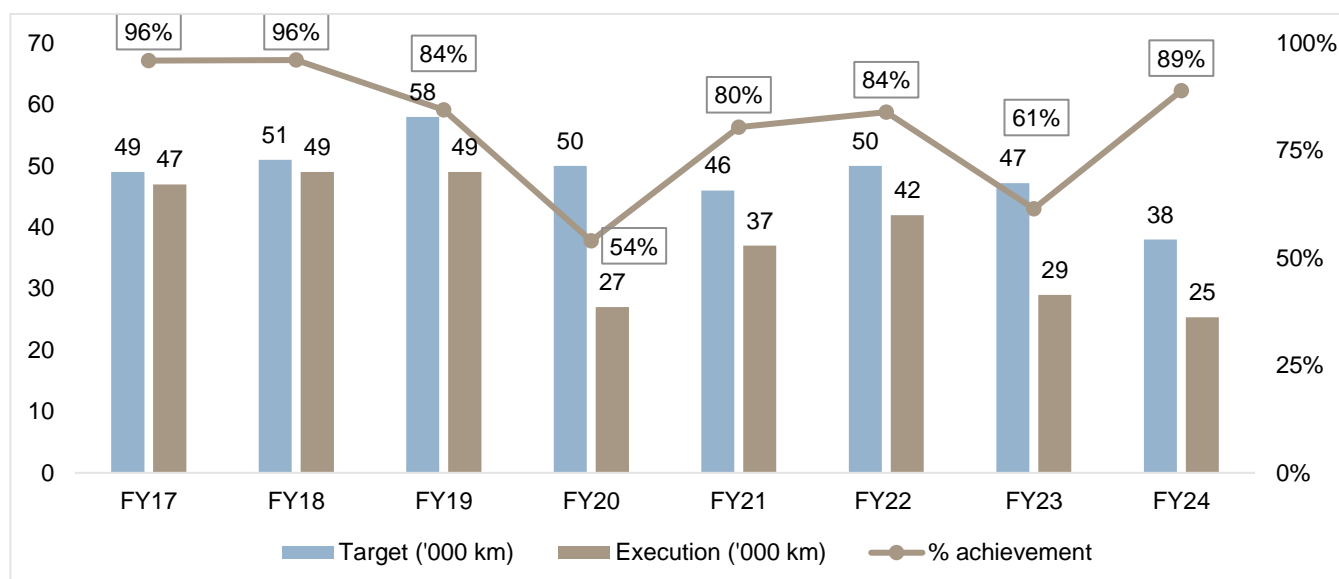
Rural infrastructure also has a pronounced impact on rural incomes and, in turn, two-wheeler sales. Under the Pradhan Mantri Gram Sadak Yojana (PMGSY), launched in 2000, the government aims to build all-weather roads in the rural regions to improve connectivity and support the rural economy.

Over the years, the government has successfully executed a major portion of the PMGSY annual target set for the year. Even during fiscal 2024, it achieved 89% of the target constructing 26,000 km of 38,000 km target.

Expansion of the rural road network not only improves connectivity but also aids the rural economy. Improvement of rural infrastructure impacts two-wheeler demand in two ways: directly by generating employment in the rural economy during the construction of roads, thereby increasing wages and overall income, and indirectly by enabling accessibility, which, in turn, increases mobility.

Thus, the continued expansion in rural infrastructure is expected to back two-wheeler demand growth over the long term.

PMGSY execution



Source: NHAI, MoRTH, CRISIL MI&A

Financing support

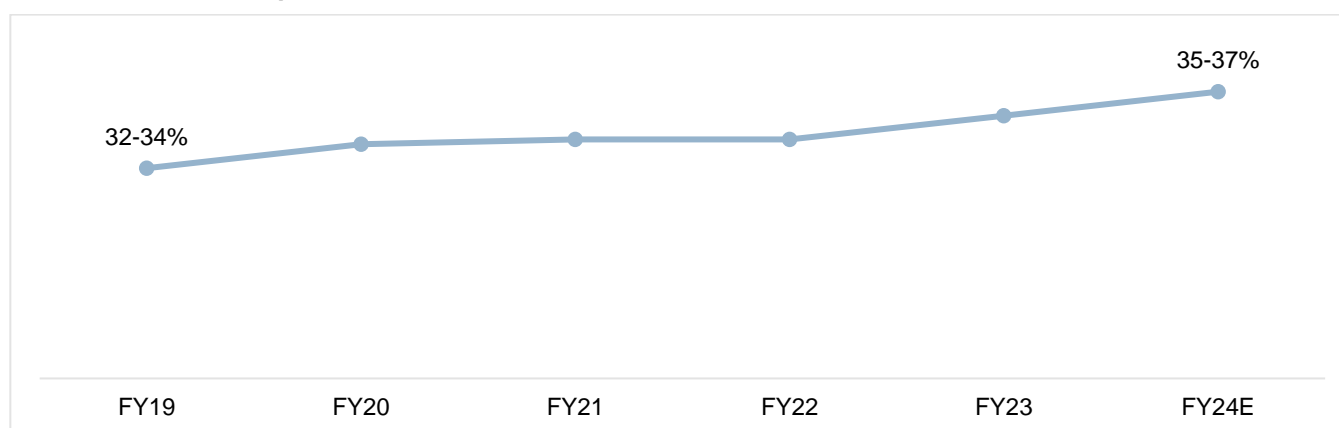
Finance support plays an important role in the overall demand growth of the two-wheeler industry given the relatively lower income profile of customers as well as the smaller ticket size of the industry.

Over the years, as competition intensified, financial institutions have expanded their reach to gain further market share within the auto finance industry. Moreover, the entry of NBFCs that focus primarily on non-metros, expanded the reach of the financing system further as banks primarily catered to the urban and salaried customers.

The expansion aided the growth of overall finance penetration in the industry and, in turn, supported the growth of the domestic two-wheeler industry. Additionally, financiers have been offering a wide range of schemes and promotions (such as low-down payment, attractive EMI options and waiver of processing fees) to attract more customers for small ticket-sized purchases aiding the finance penetration within the two-wheeler industry.

Going forward, CRISIL MI&A Consulting expects finance penetration to improve further and support the growth of two-wheelers.

Two-wheeler finance penetration trend



Source: CRISIL MI&A

Growing gig economy

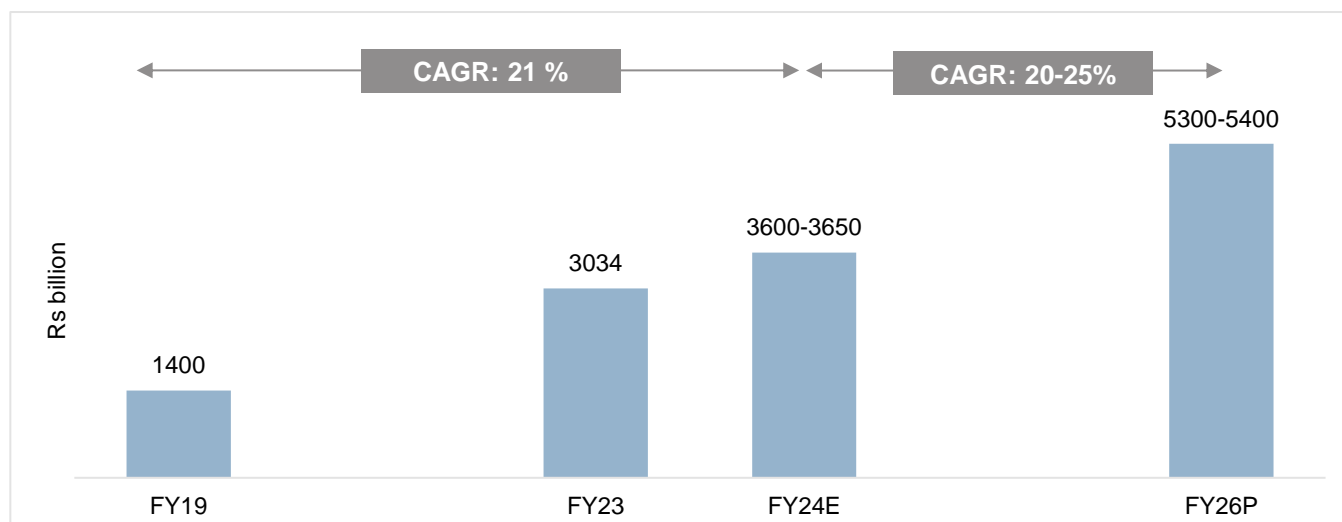
The gig economy is a significant contributor to the two-wheeler industry demand as delivery boys use these vehicles for last-mile delivery.

According to NITI Aayog, there were nearly 6.8 million gig workers engaged in the gig economy which includes food, grocery, electronics, and e commerce in fiscal 2020. The gig workforce is expected to expand to 23.5 million by fiscal 2030 backed by the expected rise in underlying industries of e commerce and food delivery services.

The Indian e-commerce industry, estimated at ~Rs 3,000 billion in fiscal 2023, has had a phenomenal run over the past few years. It has managed to attract not only consumers but also investors across the world and has grown more than three-fold between fiscals 2018 and 2023 on the back of increasing internet penetration, rising popularity of online shopping and lucrative deals and discounts offered by well-established players and start-ups. However, in fiscal 2023, the growth moderated a bit but remained healthy.

CRISIL MI&A projects the e-commerce industry to cross Rs 5.3 thousand billion by fiscal 2026, logging a CAGR of 20-25% between fiscal 2024 and fiscal 2026. Healthy growth is expected to support the demand for two-wheelers in the long run.

E-commerce industry outlook



Source: CRISIL MI&A

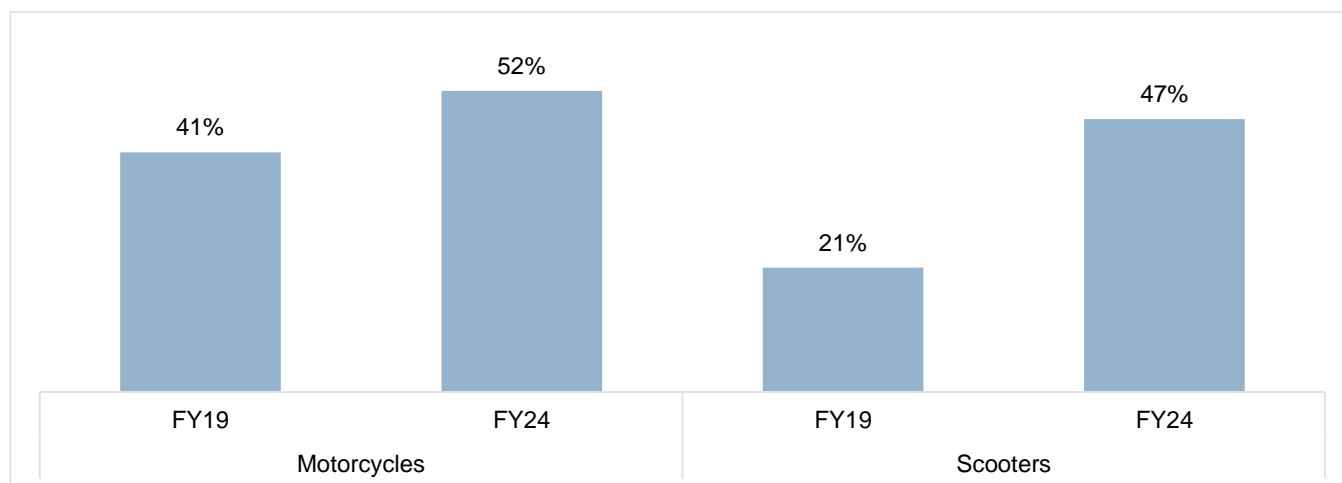
Premiumisation in the industry

A clear shift towards premium vehicles is visible in the two-wheeler industry. Customers are looking to upgrade to the next premium vehicle segment in both motorcycle and scooter segments. The premiumisation trend is supported by various factors such as younger profile of buyers, attractive feature-rich new vehicle launches at competitive rates, vehicles being seen as an extension of a customer's personality, easier access to finance and more launches in the premium segment.

Over fiscals 2019-2024, the share of premium vehicles ($\geq 125\text{cc}$) in motorcycle sales increased significantly from 41% to 52% and in scooter sales from 21% to 47%. Despite the commuter motorcycles and basic 110 cc scooters segments witnessing a sharp contraction, traction in premium motorcycles and scooters restricted the fall in overall sales. In the last five years, the premium segments have primarily provided the thrust to the industry.

In the long term, CRISIL MI&A expects the premiumisation trend to support the overall industry growth and support the sales.

Share of premium two-wheelers



Note: Premium motorcycles/ scooters: => 125 cc vehicles

Source: SIAM, CRISIL MI&A

Electrification in the two-wheeler segment

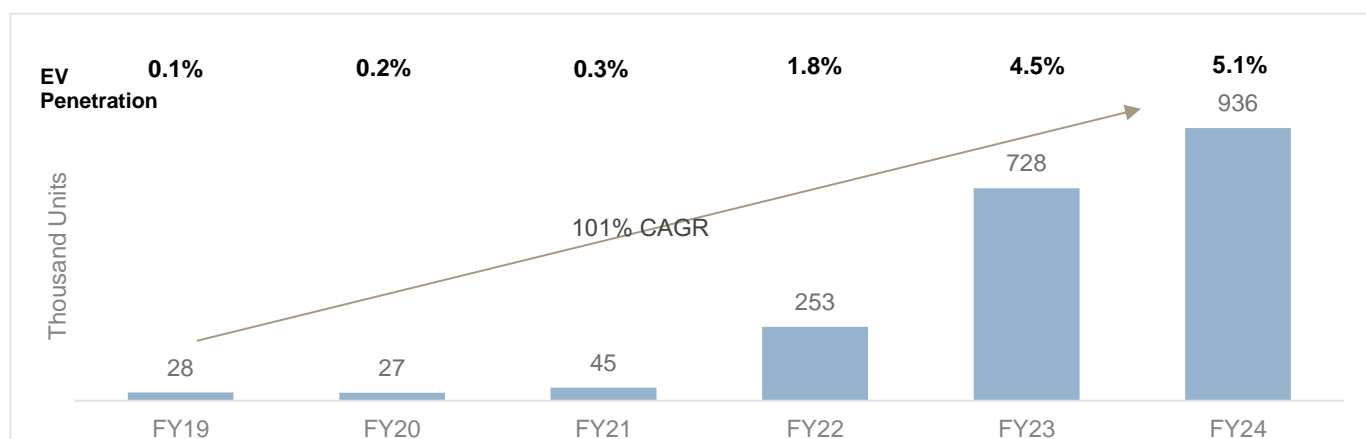
Usage of EVs has increased globally because of the need to curb pollution. In India, too, EVs are gaining popularity, as the government is extending support via Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME II), a policy that encourages the use of electric vehicles and reduce the use of fossil fuel-powered vehicles and tax rate cuts to encourage EV adoption. Further, growing awareness and concerns about environmental issues are likely to drive electrification in India.

EV sales have skyrocketed, especially post the pandemic, aided by the rising awareness, government support and expanding EV portfolio of the industry. The entry of the new age non-traditional OEMs such as Ola, Ather and Okinawa provided an additional boost to the EV segment in India.

While the ICE two-wheeler sales contracted at 3.7% CAGR between fiscals 2019 and 2024, EV sales logged 101% CAGR, thus restricting the drop in overall industry sales.

Even going ahead, the furthering electrification is estimated to provide the much-needed thrust to the industry growth over the long-term horizon. EVs have been covered in detail in the next chapter.

Electric two-wheelers sales trend over fiscals 2019-2024



Note: VAHAN data does not include Telangana & Lakshadweep retails

Source: VAHAN, CRISIL MI&A

Electric two-wheeler retails were growing only at a moderate pace until fiscal 2022 owing to limited vehicle portfolio, lower awareness, customer concerns regarding the range and inadequate charging infrastructure, despite the Rs 10,000 per kWh government incentive under the FAME scheme. In June 2021, demand incentive for two-wheelers was increased to Rs 15,000/ kWh. Further, expansion in vehicle portfolio and entry of Ola provided an additional thrust to the electric two-wheeler sales in fiscal 2022.

Additionally, ICE vehicles witnessed a steep rise in prices in fiscal 2021 owing to the BS-VI implementation and a further price hike in fiscal 2022 because of the increase in raw material prices. The price hike was much higher than the typical 3-4% annual raise. Over and above the increase in vehicle acquisition costs, the sharp rise in petrol prices (petrol prices crossed Rs 100 mark) during the year provided an additional incentive to customers to shift from ICE vehicles to electric two-wheelers. During fiscal 2022, amid the severe Covid-19 second wave, pressure on incomes and increased medical expenses, limiting other expenses was a priority for most of the customer base.

Thus, the increased subsidy on electric two-wheelers, vehicle portfolio expansion and increased acquisition and operating costs of ICE two-wheelers led to the sharp growth in electric two-wheeler retails during fiscal 2022 to ~253,000, up 5.6x from 45,000 in fiscal 2021.

Growth momentum continued for the segment in fiscal 2023, when a sharp push from new age players such as Ola and Ather supported the growth. Legacy OEMs, especially TVS, scaled up their EV production, providing an impetus to the EV sales during the year.

Fiscal 2024 began on a very strong note. However, on June 1, the government reduced the FAME subsidy incentive cap from 40% of a vehicle's value to 15% and capped the subsidy at Rs 10,000 per kWh of battery from Rs 15,000. Owing to this, manufacturers have had to increase the prices of electric scooters, which led to a 57% sequential slowdown in sales in June. This sharp sequential contraction was on an elevated base of May 2023, where customers had pre-bought significantly owing to the price rise from June.

Shrinking replacement cycles

The replacement cycles in the passenger vehicle sector has shortened from an average of 10-12 years a decade ago to 7-8 years because of various factors.

For one, the vehicle portfolio has been expanding with entry of newer players — global and non-traditional — and launch of attractive, feature-rich and competitively priced vehicles. Also, frequency of new vehicle launches by OEMs have increased. The new launches are technologically advanced, state-of-the-art vehicles catering to younger buyer demographic. Moreover, the financing coverage has been expanding and awareness level increasing. The rising share of scooters with a relatively lower ownership holding period is another factor contributing to the shortening of the replacement cycle. Rising premiumisation and electrification is also supporting the trend.

The shortened replacement cycle for the average customer is an added boost for the two-wheeler sales.

R&D support

The customer base of the two-wheeler industry has shifted towards the young, tech savvy gen Z customers, who prefer the latest state-of-the-art features, attractive designs and colours, connected technology and hi-tech accessories for their new vehicles. This customer base sees vehicles as an extension of their personality.

Moreover, as the replacement cycles have shortened, the intermittent new vehicle launches are a must to ensure continued demand.

Thus, all the OEMs spend a notable amount on research and development (R&D) to integrate the latest tech, design and features for the upcoming models. R&D has also become a necessity to analyse the safety of the two-wheeler riders.

In the last six years, the two-wheeler OEMs have spent ~2% of their annual operating incomes on R&D.

Advancement in vehicle technology

Over the years, there has been a significant advancement in vehicle technology. Various new features have been added in ICE and EVs, making them more appealing to the customers, especially the younger buyers. The EV segment has revolutionised the industry in terms of latest technological designs and offerings and ICE vehicles are following with notable advancements. The new-age vehicles offer a wide range of features and innovations to ensure safer, more efficient and environmentally friendly transportation and that cater to varied consumer needs.

Over the years, two-wheelers have seen addition of features such as digital instrument cluster (around 2010), navigation (around 2017), USB charging port (2017), Bluetooth connectivity (2018) and cruise control. Over and above these basic features, premium vehicles, including EVs, offer much advanced features such as full-colour thin film transistor (TFT) displays, gear shift indicators, real-time mileage, fuel efficiency metrics, music, calls on vehicle display, riding modes, traction control, keyless ignition, smart helmets with built-in communication, heads up display etc.

As technology continues to advance, the two-wheeler industry will witness more innovations in the coming years, making ride safer and more enjoyable for the customer, in turn, supporting the growth of the industry over the long-term.

Accessories supporting OEM margins

Over the years, companies have expanded the offerings introducing company-branded accessories and merchandise such as scooter covers, handlebar pads, engine guard, backrest, helmets, apparels, gloves etc. Such branded accessories form an integral part of the two-wheeler industry. The merchandise is more common for the premium models and form a sizeable portion of the revenue for the OEMs.

Today EV manufacturers also offer accessories and merchandise for their customers, including smart helmets, portable chargers, fast chargers, pressure monitors etc. EV manufacturers also offer merchandise for their customer base (T-shirts, jackets etc).

These are high-margin (25-30%) products. They not only promote the OEM's brand but also provide an added support to the company's top line and bottom line.

3.2. Outlook for Indian two-wheeler industry (fiscal 2024 to 2029)

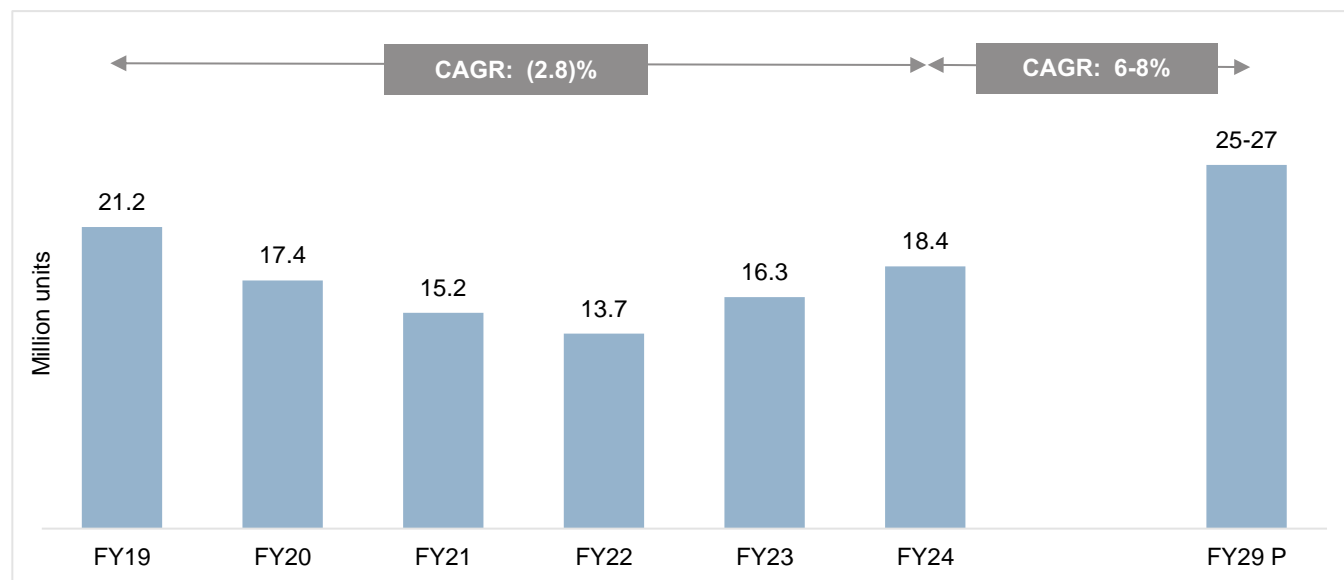
The industry is expected to continue its growth momentum over the long-term horizon led by the positive microeconomic and macroeconomic environment, favourable rural demand, premiumization, intermittent launches, shrinking replacement cycle and continued support from financiers. Moreover, continued R&D investments by the OEMs and the technological advancements in the industry to provide an added support to the growth of the industry over the long-term horizon.

Additionally, the fast-rising EV segment, with EV portfolio expansion by legacy players, capacity expansion by new age players will accelerate the industry growth.

Introduction of CNG powertrain, which will offer lower operating costs compared to petrol variants, will push the two-wheeler industry growth further.

Led by these positive industry drivers, two-wheeler industry sales are projected to log 6-8% CAGR and reach volume of 25-27 million by fiscal 2029.

Domestic two-wheeler industry outlook until fiscal 2029

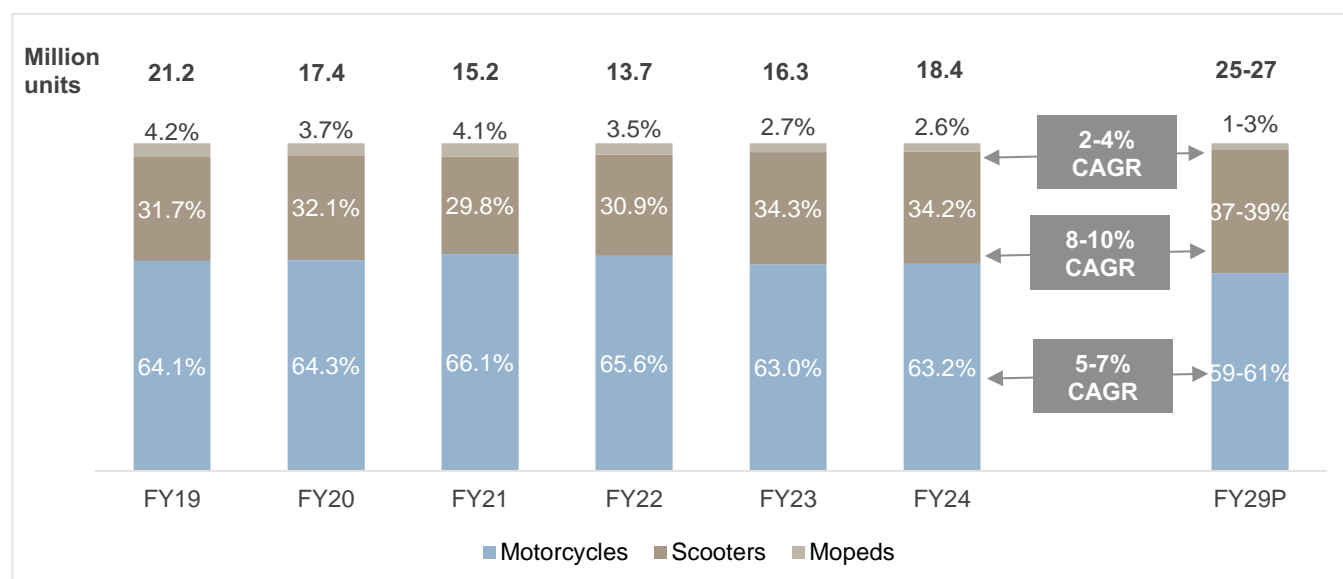


Source: SIAM, CRISIL MI&A

Going ahead, over the long term horizon, CRISIL MI&A expects the scooter segment to grow at a much faster pace off the relatively lower base, backed by expected sharp rise in E scooter demand, ubiquitous usage of scooters, rising share of women in workforce, projected growth of e commerce segment coupled with continued focus of OEMs on the scooters segment. The strong launch pipeline, especially for e scooters and faster replacement cycles of the scooters segment will also back the faster growth of the scooters segment. Further, the improvement in supporting charging infrastructure is expected to provide added impetus to the segment's growth.

CRISIL MI&A projects the scooters segment to grow at a faster pace of 8-10% CAGR over the long-term horizon. However, the ICE scooters segment is expected to contract amidst the shift towards the EV segment. Sizeable portion of the ICE scooter replacement demand will shift towards the electric variants.

Segmental Split Outlook



Source: SIAM, CRISIL MI&A

Motorcycles, on the other hand, are projected to clock a slower 5-7% CAGR during the period. The premium motorcycles sub-segment is expected to continue to provide the thrust to the motorcycles segment while the commuter segment is projected to grow only moderately.

Premiumisation and upgradation will limit the growth of commuter motorcycles sub-segment. Shifting customer preference towards premium segments supplemented by OEM focus and more launches in the premium segment will provide the thrust to the premium segment going ahead.

The moped segment is expected to grow almost in line with the overall industry growth led by the electrification in the price sensitive segment. Electrification within the mopeds segment will lead the growth of this segment. CRISIL MI&A expects the relatively financially weak, bottom-of-the-pyramid customer base of mopeds to opt for EV mopeds which have relatively lower acquisition costs.

At present, there is only one model, the recently launched E luna, in the mopeds segment. However, more models are expected to be launched in the short term, which will revive the growth of this contracting segment.

Exports outlook

CRISIL MI&A expects two-wheeler exports to clock a faster 3-5% CAGR (vs 1% CAGR between fiscals 2019-2024) to reach 4.0-4.5 million by fiscal 2029.

The growth will be propelled by macro-economic improvement in exports markets, expansion in geographical coverage by the OEMs and more vehicle models getting shipped. Moreover, the fast-growing EV segment is expected to contribute meaningfully to exports amid the capacity expansion by players, sharpening focus on exports and sharp rise in the number of EV models.

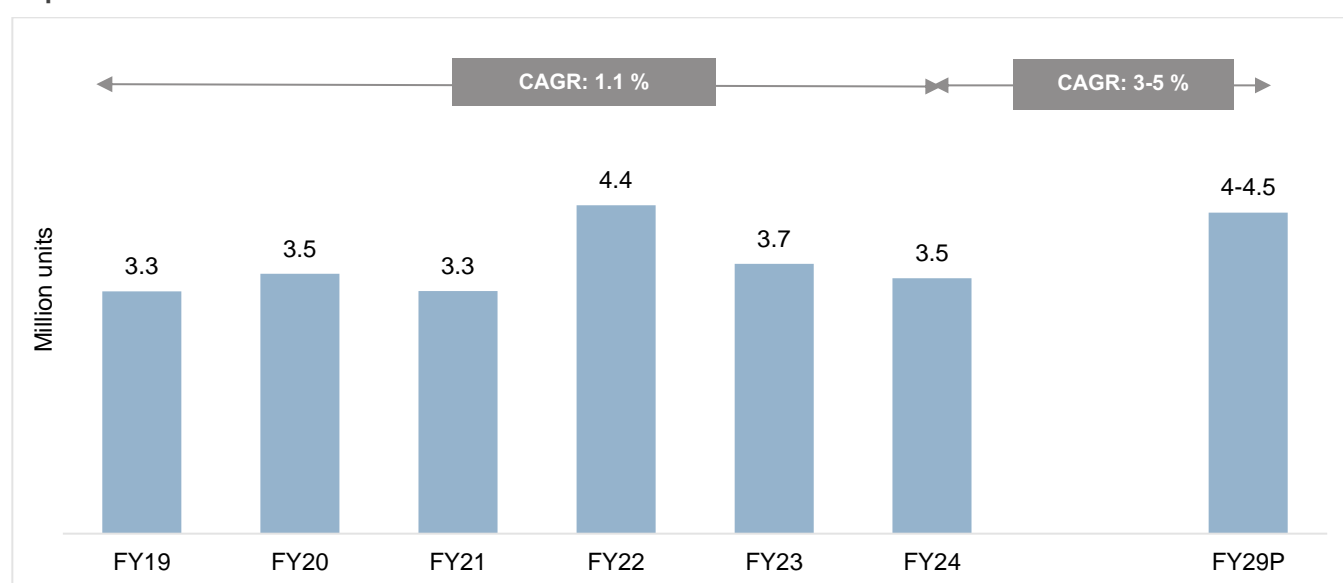
Being one of the largest two-wheeler markets, India has a unique opportunity to leverage its scale and manufacturing competitiveness to produce electric two-wheelers not just for the domestic market but also for the exports markets. Further, policies, including the PLI scheme, are offering a momentum to domestic OEMs to manufacture and export EVs. The government offers incentives through PLI for the entire EV ecosystem, including automobiles, auto components and ACC batteries.

Additionally, the growing demand for eco-friendly and sustainable transportation options globally is expected to provide a fillip to the demand for electric two-wheelers going forward. Countries such as Nepal, which have a strong dependence on two-wheeler imports from India, have tall electrification targets (90% EV sales by 2030). These will also aid the electric two-wheeler exports demand going ahead. Thus, the rise in EV exports will support the overall two-wheeler industry exports during fiscals 2025-2029.

India's trade agreements with major global economies would help the domestic OEMs enhance the exports of automobiles and related components. India has signed FTAs with several nations, including the UAE and Australia. The country is also negotiating with the UK and EU to sign FTAs. Such agreements offer immense opportunities for Indian OEMs, helping them tap into a broader customer base and establish the country as a key player in the global automotive industry.

Nonetheless, geopolitical flare-ups can have a negative impact on the oil prices, thereby increasing the inflationary pressure in major importing countries. This can, in turn, impact demand for vehicles in the near term.

Exports outlook



Source: SIAM, CRISIL MI&A

FTA boost two automobile exports

In order to expand the exports markets while ensuring access to raw materials and capital goods necessary to accelerate domestic manufacturing, India is engaged in regional and bilateral trade negotiations. Currently, the country has favourable market access and economic cooperation with more than 50 countries through multiple trade agreements. FTAs are aimed at eliminating or lowering the trade barriers for Indian exporters, so that they can gain a competitive advantage in the foreign markets, paving the way for increased sales and market share. FTAs give exporters access to overseas markets at low customs duties or any applicable other taxes. Further, such agreements offer a conducive environment for automakers and suppliers to technically collaborate, potentially gaining investments and knowledge that could augment the industry's overall performance and growth.

The following table lists a few trade agreements that India has signed.

Agreement	Enforced date	Member country	Agreement type	Benefit for automotive industry	Description
Comprehensive Economic Partnership Agreement	1 May 2022	UAE	FTA	Zero-duty market access	Passenger vehicles, including two-wheelers, three-wheelers, personal vehicles and a few automotive components, get duty-free market access in the UAE.
Economic Cooperation and Trade Agreement	29 December 2022	Australia	FTA	Zero customs duty	Passenger vehicles and associated components get preferential market access. They shall be exempt from customs duty.
Trade and Economic Partnership Agreement	10 March 2024	Iceland, Liechtenstein, Norway, and Switzerland	FTA	Zero customs duty	Vehicles other than railway or tramway rollingstock, and parts and accessories are exempt from customs duty
Comprehensive Economic Partnership Agreement	1 January 2010	South Korea	FTA	NA	Motor cars and automotive components are exempt from the obligation of tariff reduction or elimination
Malaysia-India Comprehensive Economic Cooperation Agreement	1 July 2011	Malaysia	FTA	Tariff reduction	Motorcycles get market access; tariffs reduced to a pre-determined level
ASEAN-India Free Trade Agreement	1 January 2010	Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam	FTA	Reduction in tariff	<ul style="list-style-type: none"> Indonesia, Cambodia plan to reduce import duty on passenger vehicles. Brunei reduced custom duty and passenger vehicles are going to get duty-free market access Malaysia, Vietnam, Myanmar, Laos, the Philippines and Thailand have passenger vehicles in the exclusion list (EL), under which no concession is granted. However, the EL is subject to annual tariff review with a view to improving market access.

These FTAs can drastically reshape the duty scenario while also offering exporters improved access in the overseas markets through various mechanisms, including duty elimination/ concession. Apart from that most favoured nation (MFN) status of India with developed/ developing nations could bring trade advantages to India in the form of low tariffs or high import quotas.

Cost of Ownership Comparison - EV vs ICE

For the Total cost of ownership (TCO) calculation, an annual running of 8000 km is considered, i.e., 25 km per day for 325 days of operation per year. A 7-year holding period is considered, assuming no battery replacement happens during the ownership period.

As of fiscal 2024, the total cost of ownership (TCO) of an e2W, even without a subsidy, was 37% lower than that of an ICE 2W for an annual running of 8,000 km. With subsidy this difference increased to 55% for fiscal 2024.

Going ahead, by fiscal 2031, e2W ownership is expected to become financially more lucrative. For an annual running of 8,000 km, the e2W TCO is projected to be 52% lower than its petrol counterpart even without the

subsidy. Total cost of ownership for an e2W is decreasing over the years amidst the lowering global battery prices, economies of scale and improving technology resulting in higher manufacturing efficiency of the electric vehicles.

Despite the favorable TCO, the acquisition cost for an e2W was more than 40% higher than its ICE counterpart during fiscal 2024. However, the price gap between the two is expected to narrow going ahead, with expected decline in battery prices. Considering the GST and road tax benefits to continue, the price gap between the acquisition costs of EV and ICE are projected to shrink to 5-10% by fiscal 2031.

TCO for seven-year ownership without subsidy

Year/Annual Running	3,000 km	6,000 km	8,000 km	10,000 km	12,000 km
Fiscal 2024	5% lower cost than petrol	28% lower cost than petrol	37% lower cost than petrol	44% lower cost than petrol	49% lower cost than petrol
Fiscal 2031	32% lower cost than petrol	46% lower cost than petrol	52% lower cost than petrol	56% lower cost than petrol	60% lower cost than petrol

TCO for seven-year ownership with subsidy

Year/Annual Running	3,000 km	6,000 km	8,000 km	10,000 km	12,000 km
Fiscal 2024	34% lower cost than petrol	49% lower cost than petrol	55% lower cost than petrol	59% lower cost than petrol	62% lower cost than petrol
Fiscal 2031	32% lower cost than petrol	46% lower cost than petrol	52% lower cost than petrol	56% lower cost than petrol	60% lower cost than petrol

Note:

- Convenience ICE scooter and Convenience E scooter have been considered for the comparison
- Subsidy Scenario includes both Central & State subsidy and have been considered till fiscal 2026, no subsidy is considered between fiscal 2026 and fiscal 2036
- Above analysis is done without considering battery replacement
- In case of battery replacement, TCO for an EV was 41% lower than ICE vehicle TCO in fiscal 2024 and it will be 55% lower than ICE vehicle TCO by fiscal 2031 considering 8000 km annual running, 7 year holding period and no subsidy.
- According to Ather Energy, battery packs can last for 7 years without a battery replacement, however, the battery can degrade in case of extreme use cases such as excessive use of fast charging, accidental damages, lack of periodic maintenance, use of unauthorized chargers, extended exposure to temperatures higher than 50 degrees Celsius and prologued idle periods.

Source: CRISIL MI&A

EVs currently offer much better technological features compared to an ICE vehicle. For example, premium variants of the EVs are equipped with touch screen HMI, Bluetooth and LTE connectivity. However, premium ICE counterparts offer only Bluetooth connectivity and basic smart connected features.

The acquisition cost of a comparable ICE 2W with Bluetooth connected features is currently 80%+ lower than the EV variant with a Touchscreen display and the software pack.

By fiscal 2031, the acquisition price gap between the ICE vehicle (with a touchscreen, connected features) and a comparable EV will narrow down to 8-12%.

For the Total cost of ownership (TCO) calculation, an annual running of 8000 km is considered, i.e., 25 km per day for 325 days of operation per year. A 7-year holding period is considered, assuming no battery replacement happens during the ownership period.

As of fiscal 2024, the total cost of ownership (TCO) of an e2W, even without a subsidy, was 37% lower than that of an ICE 2W for an annual running of 8,000 km. With subsidy this difference increased to 55% for fiscal 2024.

Going ahead, by fiscal 2031, e2W ownership is expected to become financially more lucrative. For an annual running of 8,000 km, the e2W TCO is projected to be 52% lower than its petrol counterpart even without the subsidy. Total cost of ownership for an e2W is decreasing over the years amidst the lowering global battery prices, economies of scale and improving technology resulting in higher manufacturing efficiency of the electric vehicles.

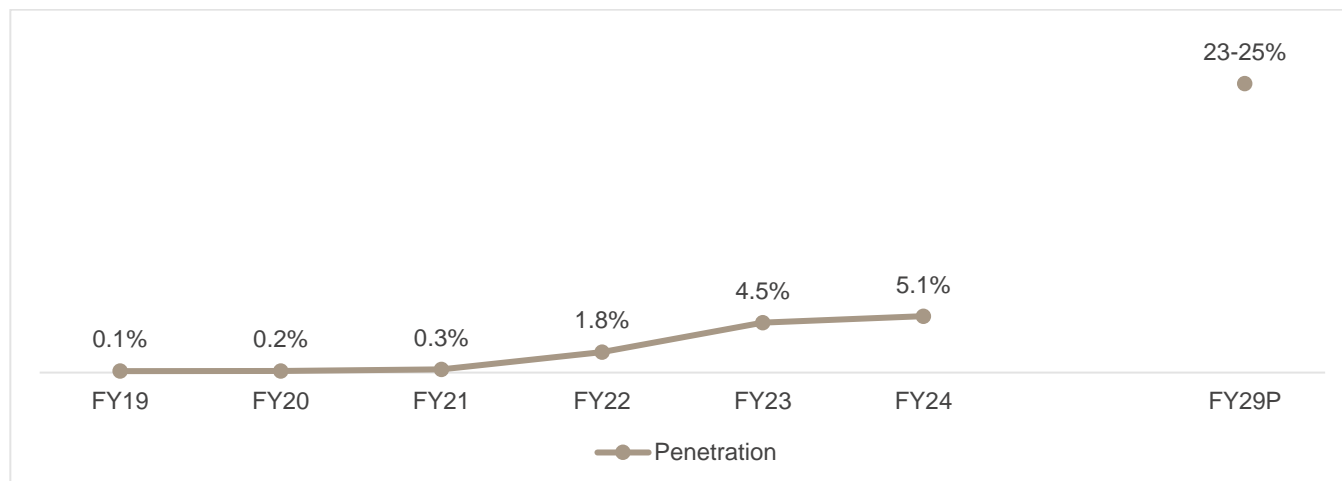
Despite the favorable TCO, the acquisition cost for an e2W was more than 40% higher than its ICE counterpart during fiscal 2024. However, the price gap between the two is expected to narrow going ahead, with expected decline in battery prices. Considering the GST and road tax benefits to continue, the price gap between the acquisition costs of EV and ICE are projected to shrink to 5-10% by fiscal 2031.

Electrification outlook for domestic two-wheeler market (fiscals 2025-2029)

The electric two-wheeler retails rose at a sharp growth pace of 101% CAGR in the last 6 years, albeit off the small base of fiscal 2019. Going ahead the growth momentum in the industry is expected to continue over the long-term horizon led by rising awareness, improving TCO for electric vehicles, bridging acquisition cost gap between EV and ICE counterparts, larger vehicle portfolio, expanding charging infrastructure, furthering financing support, increasing EV manufacturing capacity, and continued government support.

If the government continues with the demand incentive (FAME, EMPS or an equivalent alternate form) at least for the next 1 year (till fiscal 2026), CRISIL MI&A expects the EV retails to rise at a healthy pace of 45-48% CAGR and reach 6.0-6.5 million levels in fiscal 2029. And the EV penetration levels to reach 23-25% by fiscal 2029.

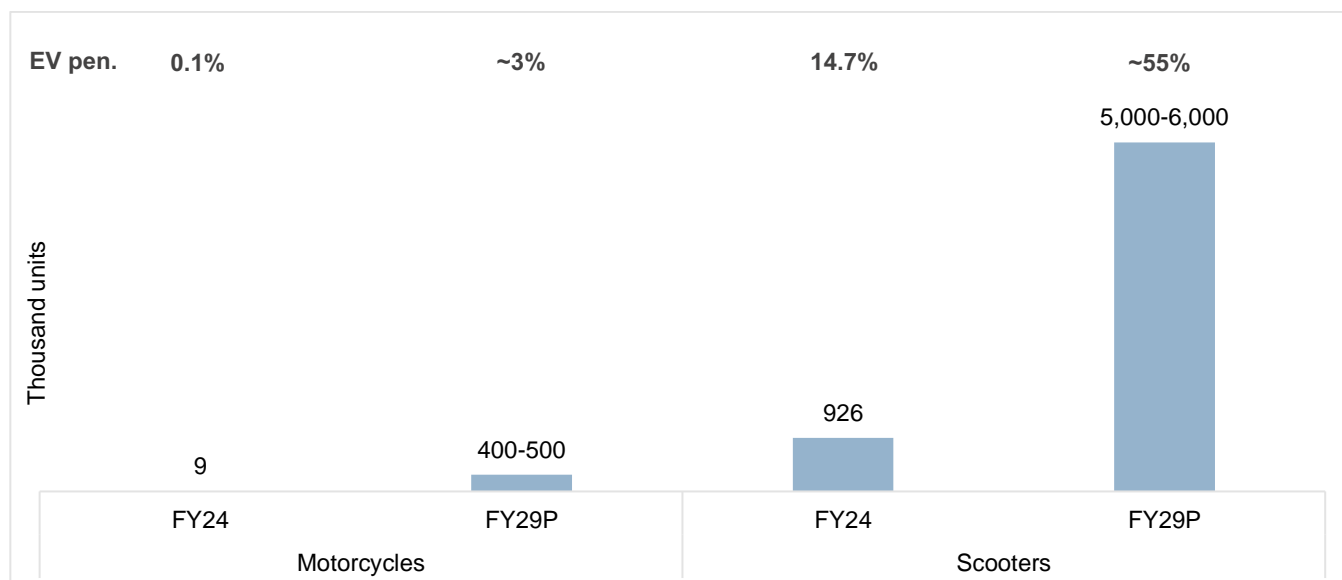
Electric two-wheelers and penetration outlook



Note: Only high-speed electric two-wheelers are considered for the analysis

Source: SIAM, SMEV, VAHAN, CRISIL MI&A

Segment-wise EV outlook



Note: Only high-speed electric two-wheelers are considered for the analysis

Source: SIAM, SMEV, VAHAN, CRISIL MI&A

Scooters are expected to lead the charge going ahead as well. EV penetration within scooters is currently the highest at 14.7% as of fiscal 2024. Amidst the fast-expanding e scooter portfolio, shifting of customer preference from ICE scooters to e scooters, OEM focus, state of the art advanced offerings, improvement in TCO as well as acquisition cost difference, a sharp rise in e scooter penetration is expected going forward. CRISIL MI&A expects the EV penetration to reach ~55% for scooters by fiscal 2029.

Electrification within motorcycles segment has remained limited amidst limited offerings as well as typical longer distance usage of motorcycles compared to scooters. However, amidst the projected launch of e bikes/ motorcycles from OEMs including Revolt, OLA, Tork will back electrification within motorcycles as well. Over the longer horizon, EV penetration is expected to reach ~3% within motorcycles by fiscal 2029.

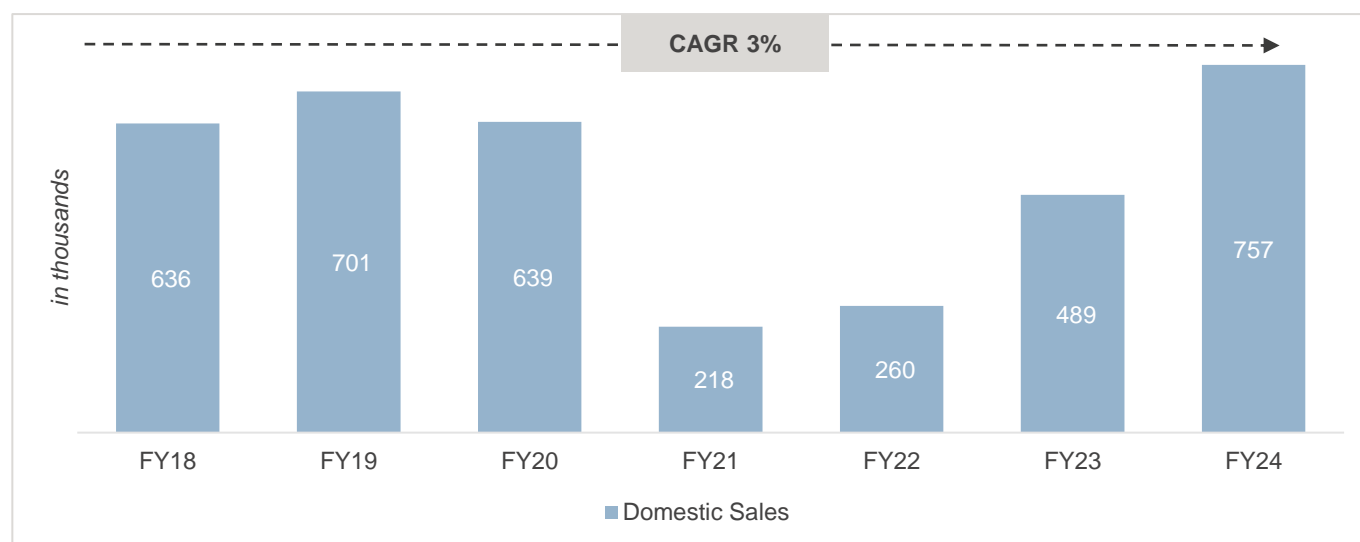
In the above projections, CRISIL MI&A has considered the government demand incentive to continue till fiscal 2026 which will provide an additional support to the EV adoption going forward.

4. Review of and outlook on the Indian three-wheeler industry

4.1. Review of Indian three-wheeler industry (fiscal 2019 to 2024)

India is the largest three-wheeler (3W) market in the world, with domestic sales of 0.75 million units in fiscal 2024. The industry contributed to ~2% of the total market – comprising two-wheelers (2Ws), 3Ws, passenger vehicles (PVs) and commercial vehicles (CVs) by volume.

Three-wheelers domestic, by volume

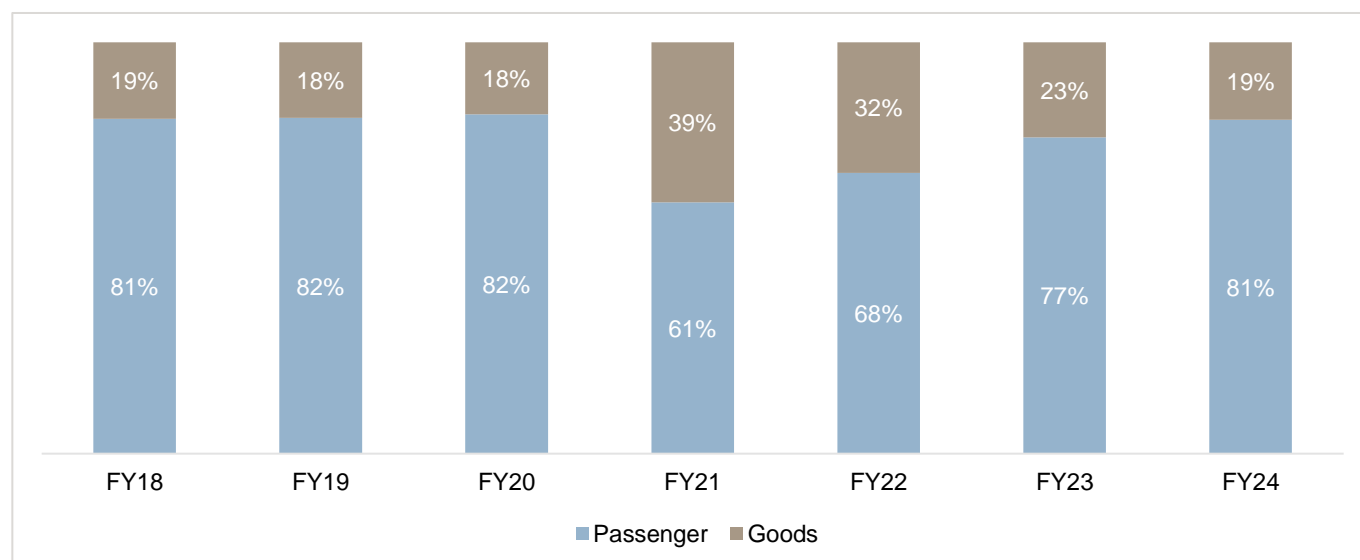


Source: SIAM, Vahan, CRISIL MI&A

Note: ICE numbers have been taken from SIAM while EV numbers have been taken from Vahan

In fiscal 2024, 3Ws domestic sales recorded a substantial on-year growth of 55% in fiscal 2024, led by Passenger vehicles.

Segment-wise share, total volume



Source: SIAM, CRISIL MI&A

3W segment is categorized into two sub segments, i.e., Passenger vehicle (PV) and Cargo/ Goods vehicle (GV). The passenger vehicle segment contributed the majority share to overall domestic sales of 3Ws, accounting for 81% in fiscal 2024. A significant decline was witnessed in fiscal 2021 in PVs due to the Covid-19 pandemic and the BS-VI transition. The pandemic shored up preference for personal mobility and leading to a sharp decline in shared mobility. However, there has been a slight recovery from fiscal 2022 as demand for shared mobility gradually increased.

The Goods segment accounted for 19% share in fiscal 2024 on a high base of fiscal 2023. The Goods segment contributed the highest 39% in 2021 with robust demand for last-mile delivery, particularly in urban areas. Electric mobility has been making strong presence on the back of a steady pick-up in last-mile connectivity demand and cargo requirement. Electric GV constitutes 28% of total GV sales in 2024, compared with 16% in 2023. The continuous growth shows immense potential, particularly in the electrification of 3Ws.

Demand drivers

Easier availability of finance

Stringent credit norms and credit information through the Credit Information Bureau (India) Ltd (CIBIL) have helped players widen their customer base. Moreover, the entry of NBFCs targeting the markets banks and captive NBFCs (operated by two-wheeler manufacturers) had exited, with focus largely on non-metros, have fuelled competition.

Sales growth in the domestic 3Ws industry was accelerated by financial incentives, such as subsidies, interest on subvention on loans, and hire-purchase schemes, tax benefit as an incentive to scrapping an old vehicle (unfit vehicle) along with the offering of the permit-exchange system at no additional cost, easier availability of finance, low interest rates, and higher funding provided by various banks and NBFC.

Stable agricultural output

The performance of the agriculture sector has been impressive over the past few years. Gross value added (GVA) in agriculture grew 4% in fiscal 2023, compared with 3.5% in fiscal 2022. The sector contributes 15% in the total GVA, and it was 12.7% before pandemic. The sector has registered an average annual growth of 4% between fiscal 2018 to fiscal 2023. During the pandemic, the agriculture sector grew by 3.3% in fiscal 2021 and 3.5% in 2022.

Institutional credit flow to agriculture and allied sectors grew at a compound annual rate (CAGR) of 14.8% between fiscals 2019 to fiscal 2023. Rabi output was favourable in fiscal 2023, supporting farmer incomes during the early months of fiscal 2024. In the current fiscal, kharif sowing was initially delayed due to a delayed monsoon. However, sowing has picked up in recent months. Moreover, higher Minimum Support Price (MSP) allocation for fiscal 2024 and good prices in mandis have maintained the positivity on ground.

The rainfall progress and distribution of rainfall in different regions should play a key role for the current kharif cycle. The progress of the monsoon and its impact on rural demand, remain key monitorable.

Steady growth in industrial GVA

The industry holds a prominent position in the Indian economy, constituting 30% of total GVA. In fiscal 2023, the industry sector grew 4.4%, compared with a strong growth of 11.6% in fiscal 2022. From the low base of fiscal 2021, industrial GVA bounced back rapidly in fiscal 2022.

The industry GVA grew at a tepid pace of 3.7% between fiscals 2018 and 2023. After ~5% growth in fiscal 2019, it contracted over the next two years, amid an unfavourable macroeconomic scenario and the Covid-19 pandemic.

Increase in investment demand has emerged as another powerful stimulus to industrial growth, as there was a significant jump in the Central government capex in the current and previous years compared with pre-pandemic year. Industry GVA is expected to be robust, driven by the government's focus on 'Make in India'. Moreover, improvement in infrastructure and higher expected corporate expenditure are likely to support the capex cycle after fiscal 2023.

Growth in e-commerce

The size of the Indian e-commerce industry was estimated at ~Rs 3,100 billion in fiscal 2023, has been phenomenal growth, barring in fiscal 2021 when it was weighed down by the pandemic. The market has managed to attract not only customers but also global investors, and has grown three times between fiscal 2018 and 2023 due to the deepening internet penetration, rising awareness about online shopping, and lucrative deals offered by well-established players and start-ups.

Online retail's share of the total size of the domestic e-commerce industry was 70% in fiscal 2023. Investment by major retailers, discounts offered by players, advertising and supply-chain expansion increased the demand in online retail during the past three fiscals, leading to a CAGR of ~20% between fiscals 2020 and 2023.

Apparel and consumer electronics segments found a foothold in the ecommerce space very early and have been growing continuously – in fact these segments are expected to form the major chunk, with grocery expected to grow at a much faster pace and raise its overall share in e-retail space.

CRISIL MI&A research believes that online grocery will be one of the fastest-growing segments in the e-commerce space, reaching around 2.5 times its current market size over the next three years. Growth will largely come from metropolitan and tier-1 cities, where penetration is still very low.

According to the Society of Indian Automobile Manufacture (SIAM), in fiscal 2024, around 35,192, electric 3Ws were sold domestically, as compared with 30,134 in fiscal 2023, due to robust growth in demand. There is a vast mobility-solution opportunity using EVs in the middle- and last-mile connectivity, with the 3Ws as delivery vectors. Electric 3Ws provide an essential element of this supply chain.

Other factors driving growth

- Ban on permits for diesel vehicles by a few top states in 3W sales
- Favourable cost economics, strong charging infrastructure, easy availability of finance should drive the growth of e-autos
- E-retail is currently an important segment in e-auto sales. An improving economy amid low-to-moderate inflation is expected to drive consumer spending in propelling retail-industry growth in, driving the sales of e-autos even further.
- A stronger infrastructure network (metro lines and road connectivity) and the need for zero-emission 3Ws for last-mile connectivity.

Electrification in 3Ws

With the emphasis on reducing the carbon footprint, electric vehicles (EVs) are gaining importance globally. India is also a signatory to the Paris Agreement under the United Nations Framework Convention on Climate Change. The country is also part of the EV30@30 campaign, targeting a 30% sales share for EVs by 2030.

The government is extending its support via Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME) and tax-rate cuts to boost EV adoption. Furthermore, growing awareness, concern for environmental issues, and keener focus from automotive companies are driving electrification in India. The EV segment received a real thrust in the past two years with model launches, increasing awareness, elevated fuel prices, and improvement in infrastructure support.

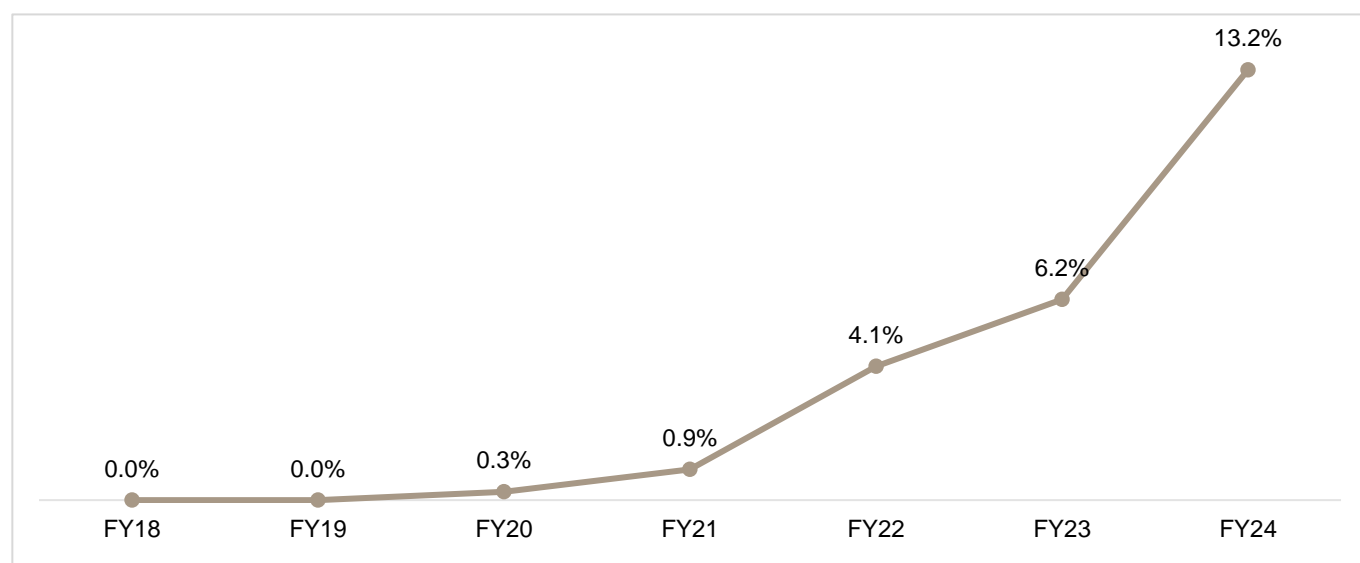
The government announced Rs 100 billion for Phase II of FAME, which commenced on April 1, 2019. This phase mainly focuses on supporting electrification of public and shared transportation and aims to support through demand incentives 0.5 million electric 3Ws. The policy aims to provide a subsidy of Rs 10,000 per kWh to three wheelers. It envisions the creation of infrastructure for EV charging. The subsidy for two-wheelers is Rs 15,000 per kWh, although it was cut from June 2023, by lowering the cap on maximum subsidy from 40% of a vehicle's ex showroom cost to 15%. EV adoption has been relatively fast in the two- and three-wheeler segments. A sharp rise in fuel costs in the past two years provided an added incentive to the price-sensitive customers of two- and three-wheelers. Moreover, a bevy of vehicle launches from the industry backed the growth in adoption, especially in fiscal 2023.

Sales of e-3Ws (L3 and L5) in India

In the e-3W segment, mobility, especially in the case of e-rickshaws, is widely used for last-mile connectivity. E-autos and e-rikshaws differ primarily in the design specification of electric powertrain, performance (in terms of torque and maximum speed) and passenger capacity. E-rikshaws are a low-cost variant of e-3Ws, without an exact Internal Combustion Engine (ICE) counterpart.

The overall e-3W market has grown at a significant 33% CAGR between fiscal 2018 and fiscal 2023. The e-3Ws with high assured utilisation rates are more profitable for businesses, as they become economical to operate at higher utilisation. E-commerce giants are preferring e-rikshaws for clean and economical last-mile connectivity.

EV penetration in 3Ws (L5 category)



Note: Electric 3W includes e-auto

Source: VAHAN, CRISIL MI&A

E-auto (i.e., the L5 category) rickshaws use lithium-ion batteries and have an average speed of more than 25 kmph. They are used for moving cargo as well as passengers. The leading players in this segment present in this space Mahindra Electric and Piaggio. Under FAME-I, e-3Ws driven by lead-acid batteries were also eligible for the subsidy. However, under FAME-II, only advanced batteries and registered vehicles are eligible. Higher initial cost of e-autos, lack of availability of a wide range of products in the market, and low availability of charging infrastructure have posed challenges to their penetration

Despite these challenges, the shift towards e-autos occurred due to low cost, economical, and environmental cleanliness.

Drivers for electrification

Total cost of ownership (TCO)

TCO for 3Ws in FY24 for four-year ownership

Annual running	30,000 km	35,000 km	40,000 km
Petrol-equivalent 3W EV	37% lower cost than petrol	42% lower cost than petrol	45% lower cost than petrol
CNG-equivalent 3W EV	33% lower cost than CNG	37% lower cost than CNG	41% lower cost than CNG

TCO for 3W in FY29 for a four-year ownership

Annual running	30,000 km	35,000 km	40,000 km
Petrol-equivalent 3W EV	43% lower cost than petrol	48% lower cost than petrol	50% lower cost than petrol
CNG-equivalent 3W EV	40% lower cost than CNG	44% lower cost than CNG	47% lower cost than CNG

Note: Total cost of ownership analysis framework takes into consideration down payment/ initial payment, Incentive/subsidies, EMI, fuel cost, maintenance cost and battery replacement cost if any over the ownership period adjusted for the resale value

Source: Industry, CRISIL MI&A

The TCO for an electric 3W is 37% lower than that of a petrol 3W and 33% lower than that of a CNG 3W for 30,000km in fiscal 2024. This is expected to be 43% lower versus petrol and 40% lower versus CNG in 2029 for the same distance, highlighting the viability of electric 3Ws for a typical commercial application. Additionally, the TCO per km of an e-auto become even more economical, because of the subsidies for e-autos.

Unlike ICE vehicles, e-3W passenger vehicles do not fall under the ambit of the permit system, leading to a shift in the customer preference towards e-3Ws. We expect the launch of new products by players in this category to drive 3W sales. Incentives declared in the FAME II and state EV policies are also anticipated to be key drivers.

Government's FAME policy to promote EVs

Under the government's push for the use of EV in the country, the National Mission on Electric Mobility was approved in 2011 and its plan, called the National Electric Mobility Mission Plan (NEMMP 2020), was released in 2013. In April 2015, the Faster Adoption of Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) was launched as a part of the mission. The first phase of FAME scheme continued until March 31, 2019, and the second phase, termed as FAME-II, was launched on April 1, 2019. FAME-II aims to strengthen the EV manufacturing ecosystem in the country through demand incentives and the establishment of a network of charging stations.

Incentive structure under FAME II

Maximum no. of vehicles to be supported	Approx. size of battery in KWh	Incentive (Rs/ KWh)	Maximum incentive (Rs)	Max ex factory price to avail incentive (Rs.)	Total fund supported (Rs Cr)
500,000	5	10,000	20% of cost of vehicle	500,000	2500

Source: Department of Heavy Industries (DHI), CRISIL MI&A

FAME II versus FAME I

	FAME II		FAME I	
	Approx. Incentive	Max ex-factory price(Rs lakh)	Incentive L1 (Rs)	Incentive L2 (Rs)
Registered 3W	40,000-62,000	5	45,000	54,000

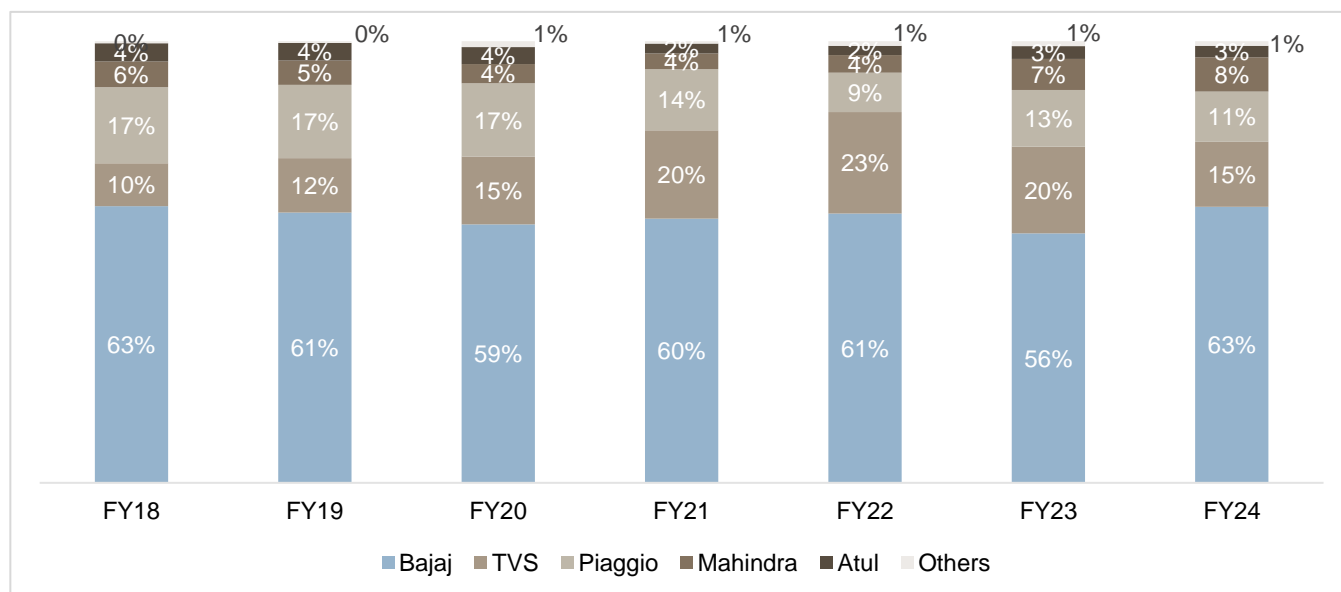
Source: Department of Heavy Industries (DHI), CRISIL MI&A

Ministry of Heavy Industries also announced Electric Mobility Promotion Scheme 2024 with a total outlay of Rs. 500 crore scheme to be implemented from 1st April to 31st July 2024. The EMPS scheme to be applicable on electric two-wheeler (e-2W) and three-wheeler (e-3W) to provide further impetus to green mobility and promote electric vehicle manufacturing in the Country.

Replacement opportunity in three-wheelers

Demand for 3Ws has improved after the pandemic subsided as customers are upgrading and replacing old fleet for higher uptime and cleaner vehicles. The replacement market for 3Ws has expanded. Pent-up demand from fiscal 2021 (when vehicular moment was restricted) had helped the segment last fiscal. It is expected to continue this fiscal, too. Further, demand in the replacement market is expected to grow owing to deeper penetration of electric three-wheelers. Additionally, central and state subsidies have lowered the capital cost. Also, some of the states have either reduced or waived of registration fees, road tax and permit requirement for electric three-wheelers. Moreover, these vehicles have inherently lower running cost. Overall, their cost of ownership is now much lower than conventional diesel or CNG three-wheelers, rendering shift to electric 3Ws attractive.

Share of key player in three-wheelers (Basis Production)



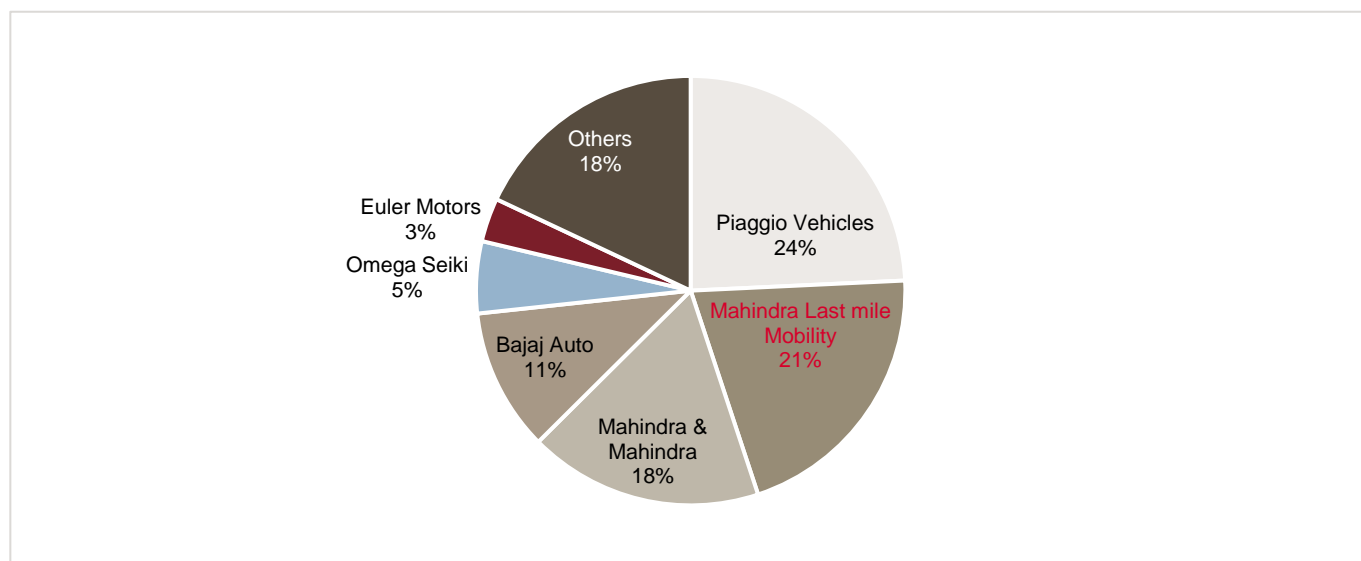
Note: Electric 3Ws include e-auto (L5 category)

Source: SIAM, CRISIL MI&A

Competition in the three-wheeler industry is reasonably consolidated, with Bajaj dominating over the past five years. The key players are Bajaj, TVS, Piaggio, Mahindra and Atul (together more than 90% of the market). While Piaggio is a strong player in the goods segment, Bajaj is way ahead of the competition in the passenger segment.

Piaggio, Mahindra top electric three-wheeler segment

Market share of key players in electric 3Ws (e-autos, FY24)



Note: Electric 3Ws do not include e-rickshaws

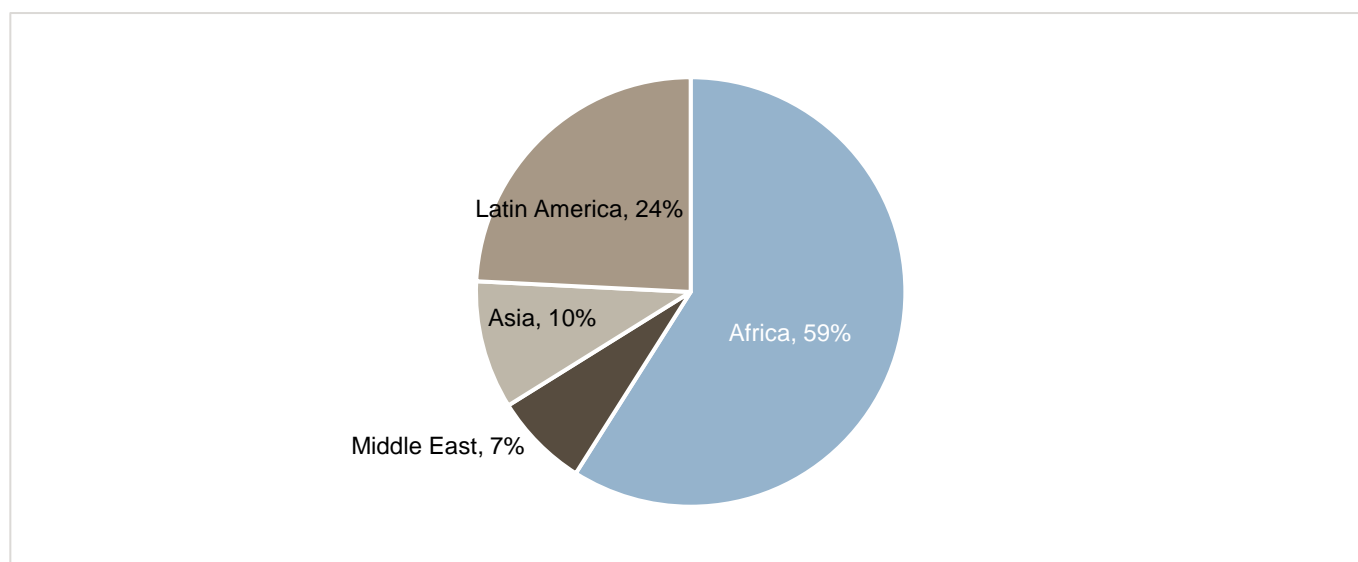
Source: Vahan, CRISIL MI&A

Mahindra Last Mile Mobility and Piaggio were the top two players in fiscal 2024, together accounting for over 45% of the market in the electric three-wheeler segment. They witnessed strong growth in sales in 2024 as three-wheeler operators looking to lower their operating costs amid high fuel prices seem to have switched to electric variants.

Electric 3Ws use lithium-ion batteries and can go above 25 kmph. They are used for cargo as well as passenger movement. There are only very few players, such as Mahindra Last Mile Mobility and Piaggio, in the space. Under FAME-I, lead acid battery-driven electric 3Ws were also eligible for the subsidy. However, under FAME-II, only advanced batteries and registered vehicles are eligible. Higher initial cost of e-autos, lack of availability of wide range of products in the market and poor charging infrastructure availability have posed challenges to their penetration.

Despite these challenges, lower operating cost and environmental friendliness of these vehicles have supported the shift towards e-autos. Unlike ICE vehicles, electric three-wheeler passenger vehicles do not come under the ambit of the permit system because of which customers prefer them. As more players launch products in this category, we expect it to drive three-wheeler sales in general. Incentives under the FAME II and state EV policies are also expected to support.

Key three-wheeler export markets (FY23)



Source: Directorate General of Foreign Trade, CRISIL MI&A

Last fiscal, exports to Africa amounted to 137,190 units, Middle East 16,630 units, Latin America 56,290 units and other Asian countries 22,460.

Share of exports to Latin America rose led by increased exports to Mexico, Peru, Ecuador and Peru. Currency devaluation, demonetisation and elections adversely impacted the exports to Africa. Exports to Asian countries also declined, led by Bangladesh, Nepal and Indonesia.

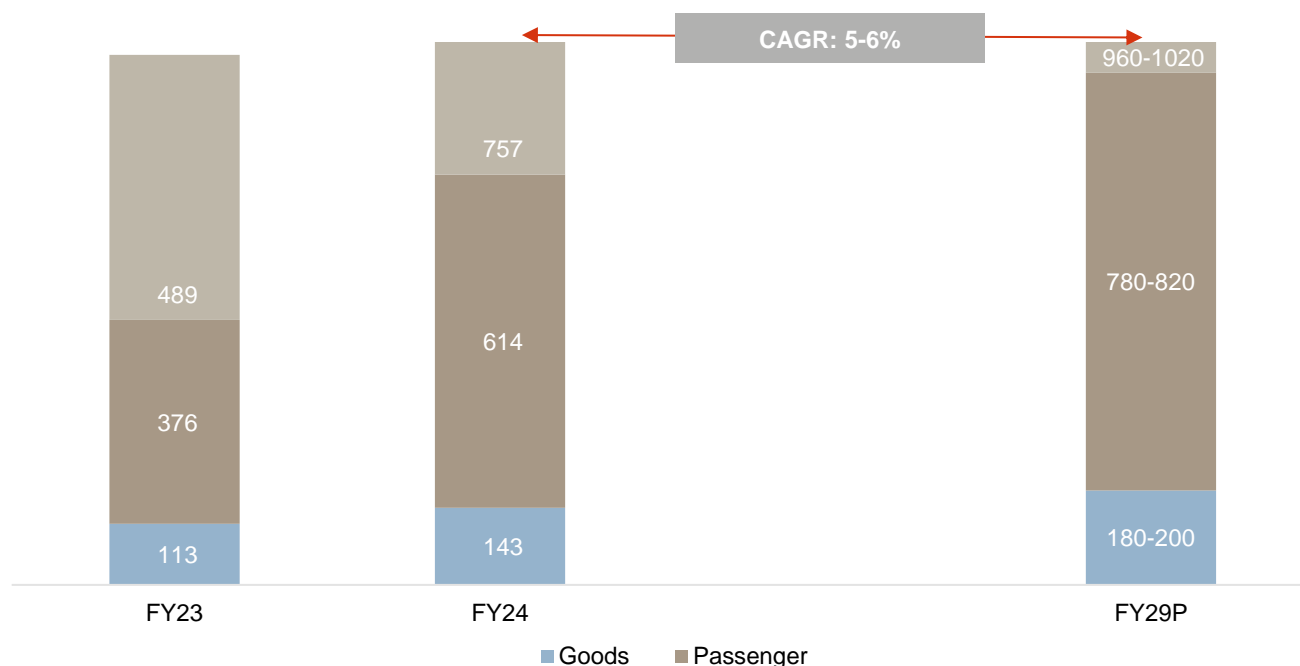
4.2. Outlook of Indian three-wheeler industry (fiscal 2024 to 2029)

Domestic sales

Consulting

The domestic three-wheeler market grew phenomenally last fiscal, recording the highest growth of 88% on-year. Electric vehicle penetration has reached to 13.2% in fiscal 2024. The availability of finance, alternative fuels and state subsidies contributed majorly to the growth.

Domestic sales outlook for FY24-29 (in volume terms)



Note: Electric 3Ws do not include e-rickshaws

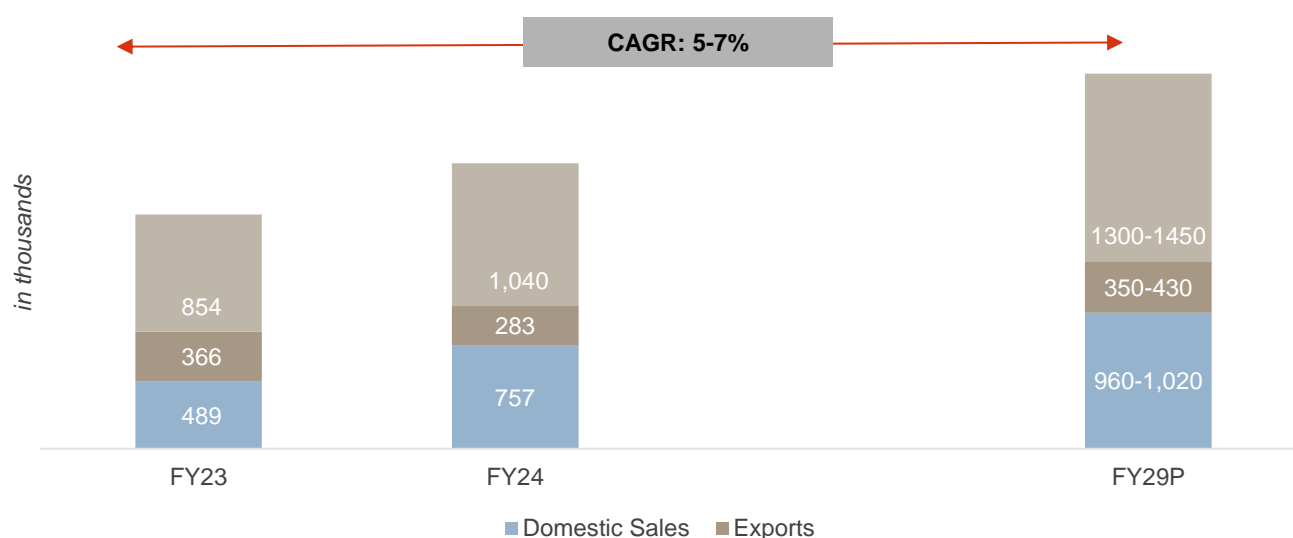
Source: SIAM, Vahan, CRISIL MI&A

Between fiscals 2024 and 2029, domestic 3Ws are projected to record a 5-6% CAGR, led by an 4-6% CAGR in the passenger segment and 5-7% in the goods segment.

Outlook for domestic sales and exports

The overall 3W industry expected to grow by 5-7% CAGR between fiscal 2024 and fiscal 2029.

Outlook for domestic sale, export volumes for 3Ws (FY24-29)



Source: CRISIL MI&A

The passenger segment accounts for around 99% in the overall three-wheeler exports from India in fiscal 2023. The total exports are expected to log a 4-8% CAGR between fiscals 2024 and 2029. Last fiscal, the exports had declined a substantial 27% on-year owing to geopolitical and monetary crises in various countries. Key exporting destinations such as Africa, Middle east, Latin America and Asia are reeling under macroeconomic challenges. Most of the countries have been impacted by high inflation. While in Bangladesh fuel prices have been increased, countries such as Kenya and Nigeria are still seeing the impact of currency devaluation. Also, shipments to Iraq and Sudan have been limited owing to civil strife in these countries. Moreover, the Israel-Hamas war in the Middle East has increased global uncertainties. But the devaluation of currency and availability of foreign exchange remain a major constraint. Overall three-wheeler exports are expected improve this fiscal 2024 but a complete recovery is possible only next fiscal year because of global uncertainties.

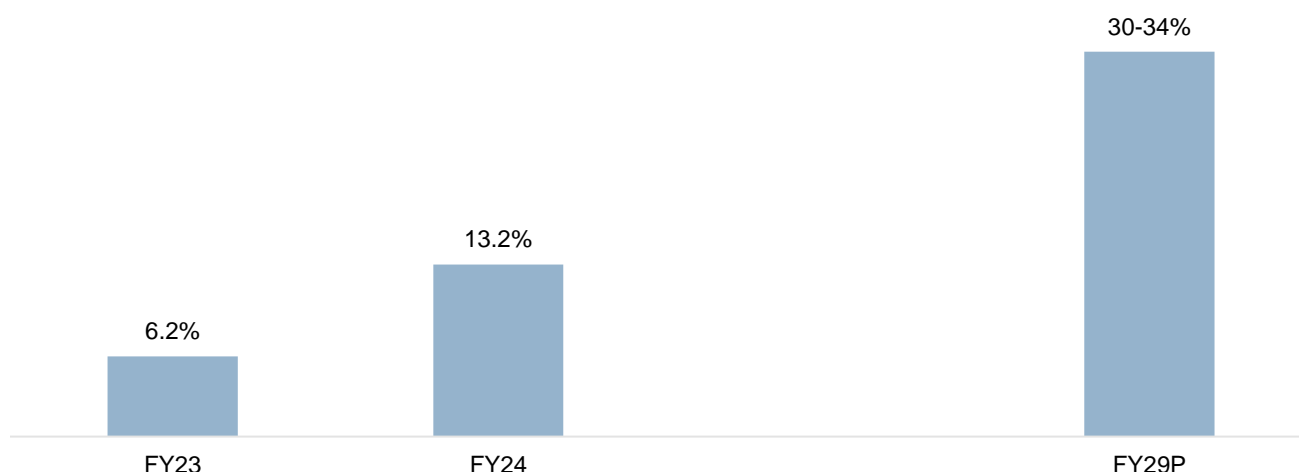
Outlook of electric three-wheeler market in India (fiscal 2024 to 2029)

CRISIL MI&A Consulting expects EV penetration in the three-wheeler segment expected to reach and go above 30-34% by 2029. 3Ws will spearhead the EV penetration in India because they are mostly used for short-distance trips and carry more load than e-rikshaws and e-bikes.

Moreover, all the conventional large OEMs, including Bajaj, Piaggio, Mahindra and TVS, have launched e-autos in the Indian market, which has improved their supply. This is expected to boost EV adoption in the long term.

Share of electric 3Ws to increase (L5 category)

EV penetration outlook for FY24-29



Note: Electric three-wheelers include e-auto

Source: CRISIL MI&A Consulting

The Penetration of electric vehicle in 3W was ~13% in fiscal 2024. However, the shift to electric 3Ws is gaining momentum owing to high prices of diesel, petrol and CNG.

The electric three-wheeler segment will continue to innovate and lead the industry as fixed and swappable battery solutions have revolutionised the sector. Also, leading OEMs are focused on electric three-wheelers. Bajaj currently dominates the petrol segment. Its market share is expected to expand with their aggressive initiative in EVs.

Favourable regulatory environment and the central and state government subsidies are lowering capital costs of buying electric three-wheelers. Also, reduction or waiver of registration fees, road taxes and permit requirement by some of the states continue to support electric vehicle adoption. Moreover, their TCO is 30-40% lower than the conventional diesel or CNG three -wheelers making the conversion to electric autos an attractive proposition.

5. Review of and outlook on the Indian Passenger vehicle industry

5.1. Review of Indian passenger vehicle industry (fiscal 2019 to 2024)

Until liberalisation in 1991, there were only three major car manufacturers in India – Hindustan Motors, Premier and Maruti Suzuki (formerly Maruti Udyog). Maruti and Suzuki's partnership was the country's first Indian-foreign joint venture. Post liberalisation, the home brand Tata Motors entered the passenger vehicle (PV) segment with a series of launches throughout the decade. Another home brand Mahindra, that traditionally manufactured off-roading utility vehicles, also entered the PV space in the late 2000s. Also, major international corporations such as Hyundai and Honda entered the country in late 1990s following gradual implementation of economic reforms, with Hyundai quickly gaining prominent market share. From 2000 to 2010, almost every major car company had also established manufacturing facilities in the country.

Amidst improvement in macro-economic scenario, rising disposable incomes and expanding vehicle portfolios, the Indian PV industry witnessed stellar growth and reached a high of 3.4 million vehicle sales in fiscal 2019. This high growth until fiscal 2019 was led by continuous improvement in GDP, increase in disposable incomes and new model launches, stable cost of vehicle ownership, as well as rising traction for Sports Utility Vehicles (SUVs).

Between fiscals 2019 and 2024, India's domestic PV sales rose at 5% CAGR. This growth was despite the sales contraction (at 10% CAGR) witnessed during fiscals 2019 to 2021. From the low base of fiscal 2021, PV sales bounced back and grew at a healthy pace to reach a historic high of 3.9 million vehicles in fiscal 2023.

In fiscal 2020, contraction of the economy put pressure on vehicle sales. Moreover, the Non-Banking Financial Company (NBFC) liquidity crisis and halting of BS-IV vehicle production amid mandatory implementation of BS-VI norms from fiscal 2021 exerted added pressure during the year. The industry also lost nearly half a month's sales at fiscal year-end owing to outbreak of the Covid-19 pandemic and subsequent nationwide lockdown.

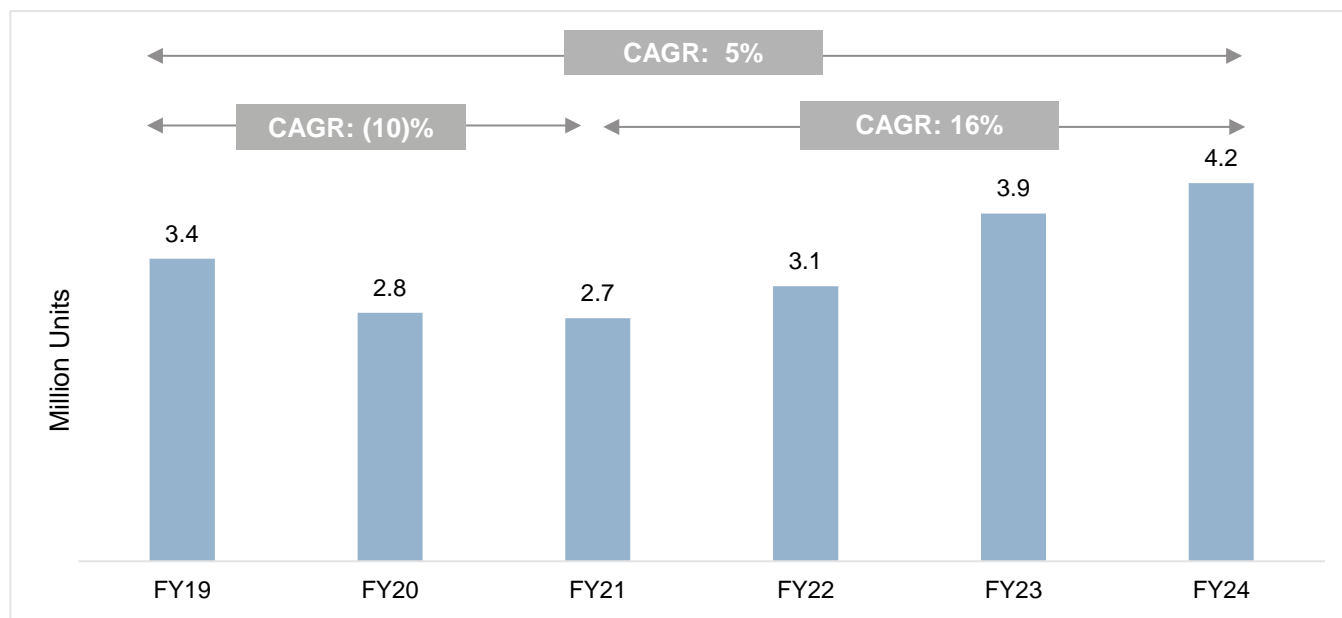
In fiscal 2021, domestic sales continued to be impacted by the first wave of the pandemic. A nation-wide lockdown, reduced mobility, and supply chain constraints leading to production cuts weighed on annual sales. Despite some improvement in sales with the reopening of the economy and increased demand for personal mobility during the second half of the year, sales contracted ~2.2% year-on-year owing to the additional price hikes due to implementation of the BS-VI norms.

Fiscal 2022 began with a much severe second wave of Covid-19. State-imposed lockdowns, economic uncertainty, and a global shortage of semiconductor supply caused extended waiting periods that impacted sales, especially in the first half of the year. There was some improvement in the economic scenario with the reopening of markets in the second half of the fiscal. Pent-up vehicle demand, further increased need for personal mobility and improved supply scenario provided thrust to PV sales during the second half. After a two-year consecutive drop, PV sales rose 13% from a very low base of fiscal 2021.

In fiscal 2023, the PV industry grew at a rate of 27% y-o-y, which was more than double the rate of 13% y-o-y witnessed during fiscal 2022, owing to the healthy pent-up demand created by two years of slump in sales volume. The orderbooks of auto OEMs were further supported by several new launches in the growing SUV category, which saw higher traction, along with multiple facelifts of existing models and easing supply of semiconductors. In fact, overall wholesale volume reached a historic high of 3.9 million units in the fiscal.

Historic production development (FY19-FY24)

Review of domestic PV sales volumes



Note: Figures in bracket to be read as negative (Eg. (10) to be read as minus 10)

Source: SIAM, CRISIL MI&A

During fiscal 2024, growth momentum of the industry continued, albeit at a slower pace, backed by the continued traction for the SUV segment, intermittent launches and improvement in disposable income. Off the high base of fiscal 2023, the industry grew 9% in fiscal 2024 to reach the historic high of 4.2 million units.

Segmental shifts amidst premiumization

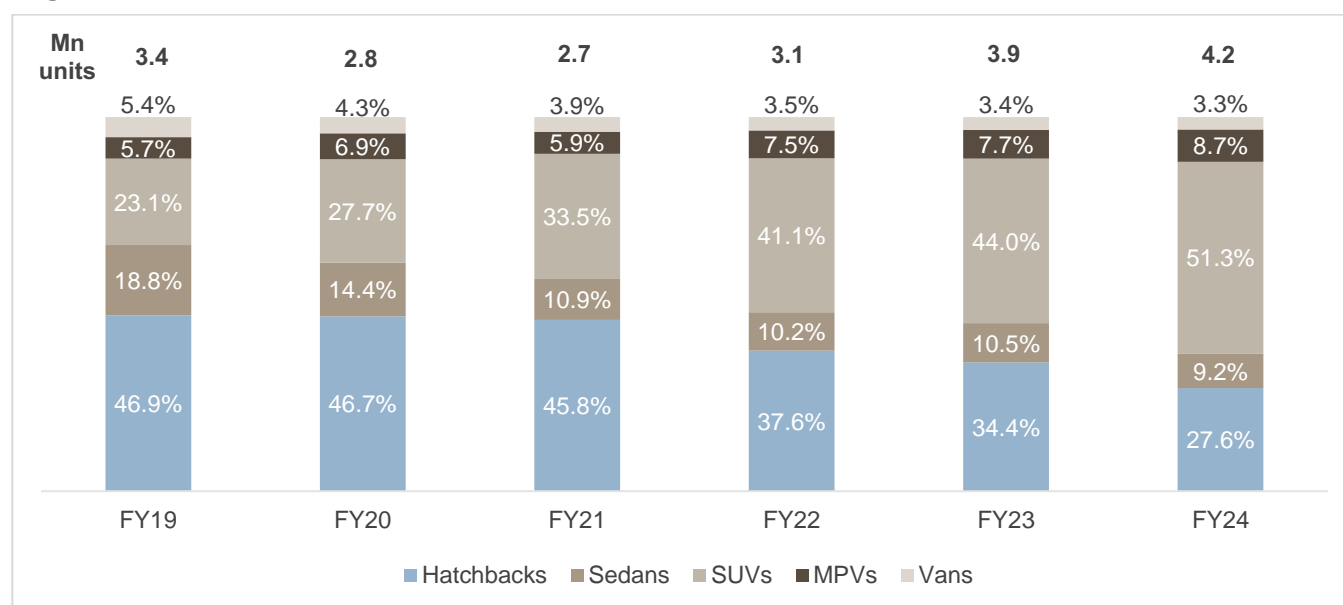
The passenger vehicle industry can be broadly classified basis body types into hatchbacks, sedans, sports utility vehicles (SUVs), multipurpose vehicles (MPVs) and vans. Traditionally, Indian passenger vehicle buyers have been cost conscious, with mileage and initial vehicle buying cost being the two main pillars of decision-making. Thereby, the hatchback segment had been leading PV sales over the years primarily because of the lower ticket size and lower running costs, making them affordable to the average Indian customer.

However, with a growing share of younger buyers who have high global exposure, there is an increasing awareness and preference towards other parameters such as driving experience, safety, advanced features and aesthetics, which are impacting the overall decision-making process. To address this change, OEMs like Tata Motors & Hyundai have showcased enhanced vehicle safety in their recent launches. Several OEMs have also gradually introduced advanced features and trickled them down from their top variants to the mid variants. Furthermore, rising disposable income has also given an impetus to growth in the SUV segment.

There has been a perceptible shift in the customer buying behaviour, where customers are prioritising vehicle experience over costs and are willing to pay a premium and are also ready to accept longer waiting time for the desired vehicle. More and more customers are now opting to buy mid to top level variants that fall within their

budgets. This shift towards premium vehicles i.e. premiumisation is resulting in intersegmental as well as intra segmental shifts.

Segment-wise trends in the overall PV sales volumes in India



Note: Figures above bars are the sales volumes.

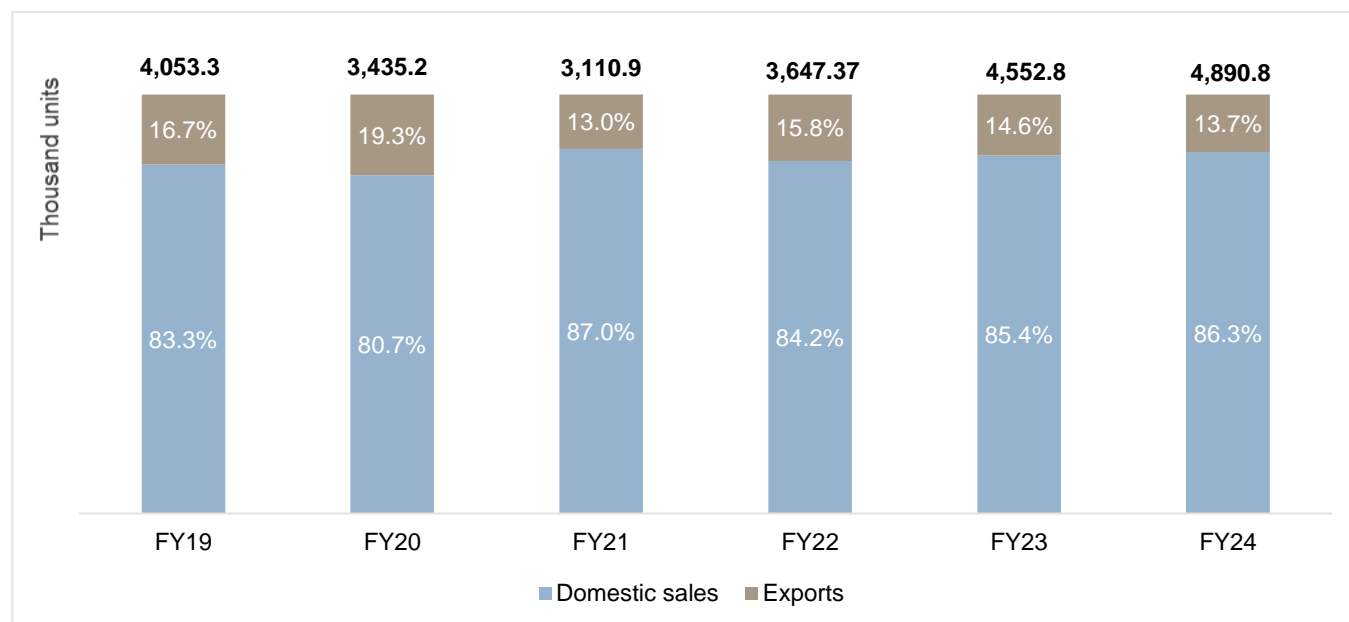
Source: SIAM, CRISIL MI&A

Split of industry by domestic sales and exports

The Indian PV market is largely domestic-focused, with domestic sales being 85.4% of the total sales in fiscal 2023. The share of exports vis-à-vis total sales contracted from 16.8% in fiscal 2019 to 14.6% in 2023. This could be attributed to the moderate growth in the global automobile industry as well as major OEMs focusing on catering to the fast-growing domestic market. Following a ~38.6% year-on-year drop in fiscal 2021, exports improved drastically by 42.9% in fiscal 2022 and 14.7% in fiscal 2023 owing to demand from emerging countries further supported by push from major OEMs.

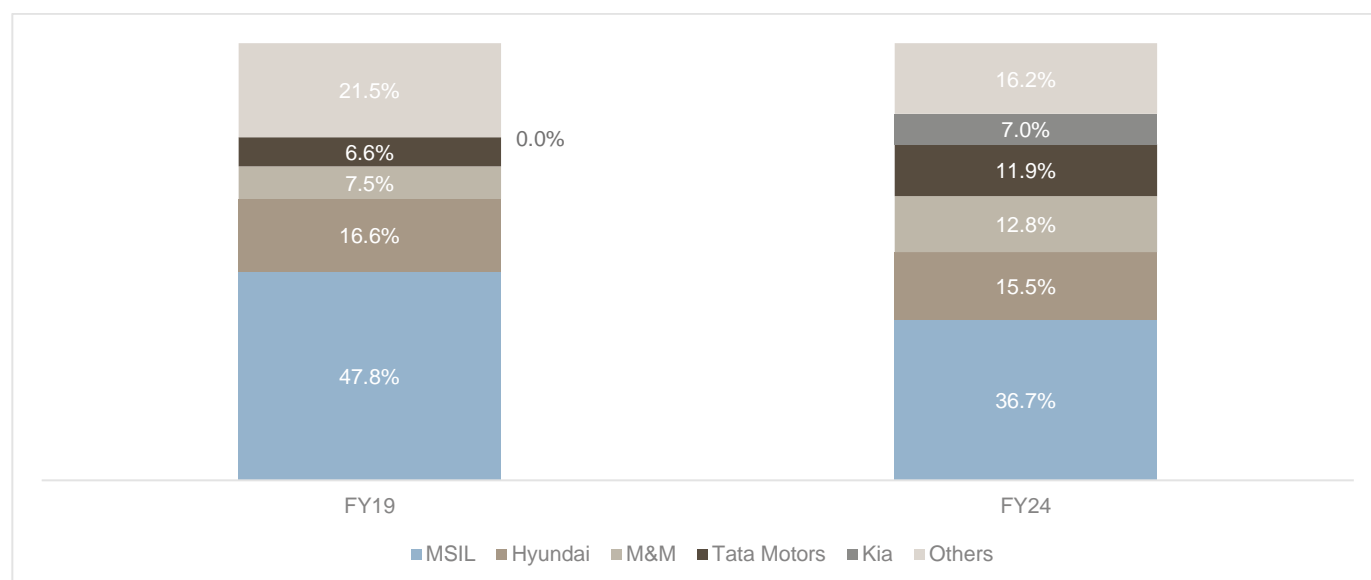
In fiscal 2020, though, the export share had risen to 19% as OEMs refocused on export markets. Stagnating domestic sales over the past three years resulted in foreign automobile manufacturers such as Ford, General Motors, and Volkswagen increasing their focus on exports, thereby improving their capacity utilisation and boosting revenues. These players were utilising India as an export hub, as witnessed by the consistent increase in the proportion of exports to their total production share. However, with the exit of GM and Ford, and impact of COVID-19 and major OEMs prioritising the fast-growing domestic market over foreign markets, the export volumes declined through fiscal 2021. However, the government, through various schemes including PLI, is boosting domestic manufacturing capacity and is offering free access for Indian OEMs to various markets through Free Trade Agreements. These combined with OEMs developing products in-line with global trends is expected to drive the demand for exports going forward.

PV industry share of domestic sales and exports (FY19-FY24)



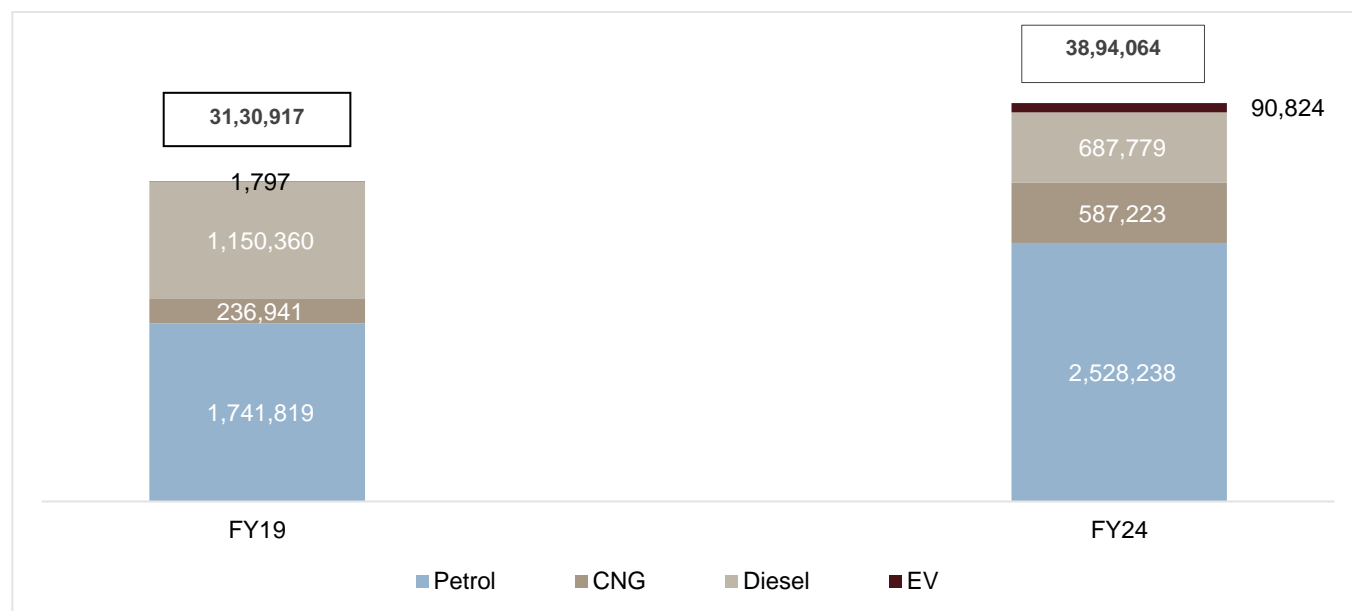
Source: SIAM, CRISIL MI&A

OEM wise split for Conventional Fuel vehicle retails



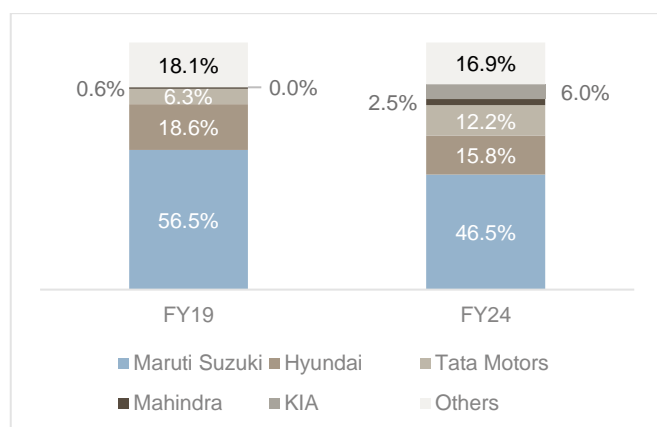
Source: VAHAN, CRISIL MI&A

Fuel wise split for vehicle retails



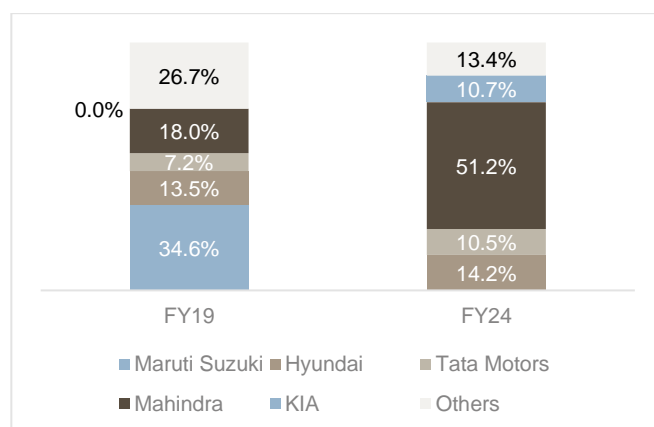
Source: VAHAN, CRISIL MI&A

OEM wise split for Petrol vehicle retails

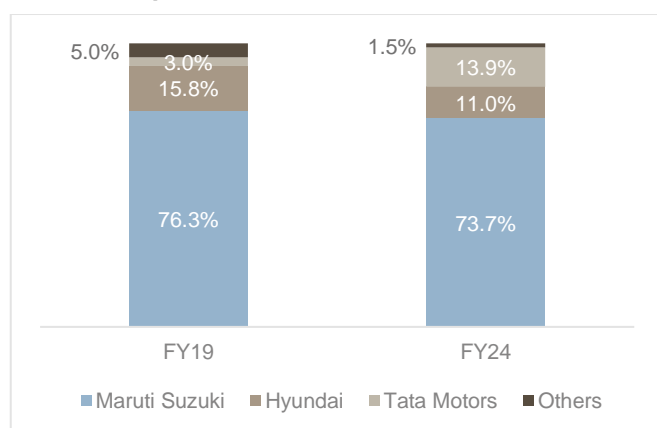


Source: VAHAN, CRISIL MI&A

OEM wise split for Diesel vehicle retails

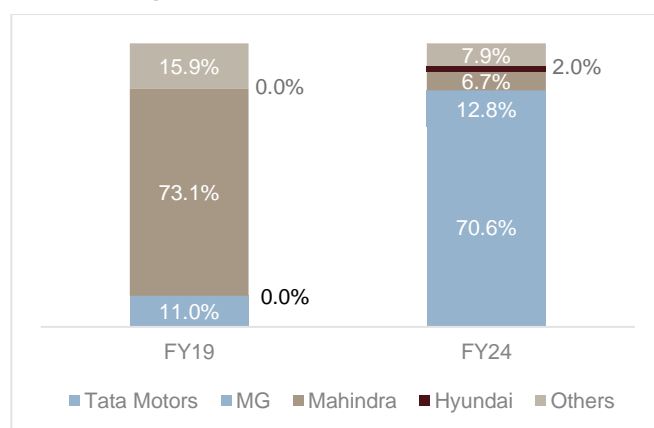


OEM wise split for CNG vehicle retails



Source: VAHAN, CRISIL MI&A

OEM wise split for EV retails



The share of CNG vehicles in the entire industry retails has more than doubled in the last 5 years to 15% in fiscal 2024. CNG vehicles were primarily preferred for the commercial (taxi) segment, limiting their contribution to a 6-8% range. However, there has been an increase in the CNG portfolio especially in the last 2/3 years. CNG powertrain options were introduced in premium hatchbacks and SUVs (Exter, Punch, Brezza, Fronx, Altroz, Baleno, etc.) due to the rising acceptance of CNG from the personal vehicle buyers. This has thrust the share of CNG powertrain in the last 2 years. Its contribution rose from 8% in fiscal 2022 to 15% in fiscal 2024. Additionally, the reduction in CNG fuel price post the Kirit Parikh panel recommendation provided an added boost to the CNG sales during fiscal 2024.

The recently emerged EV segment also expanded its presence especially in the last 3 years backed by launch of EV models, expanding charging infrastructure as well as rising climate consciousness. The share of electric vehicles in the overall retails increased from 0.1% in fiscal 2019 to 2.3% in fiscal 2024. (The EV segment is covered in detail below).

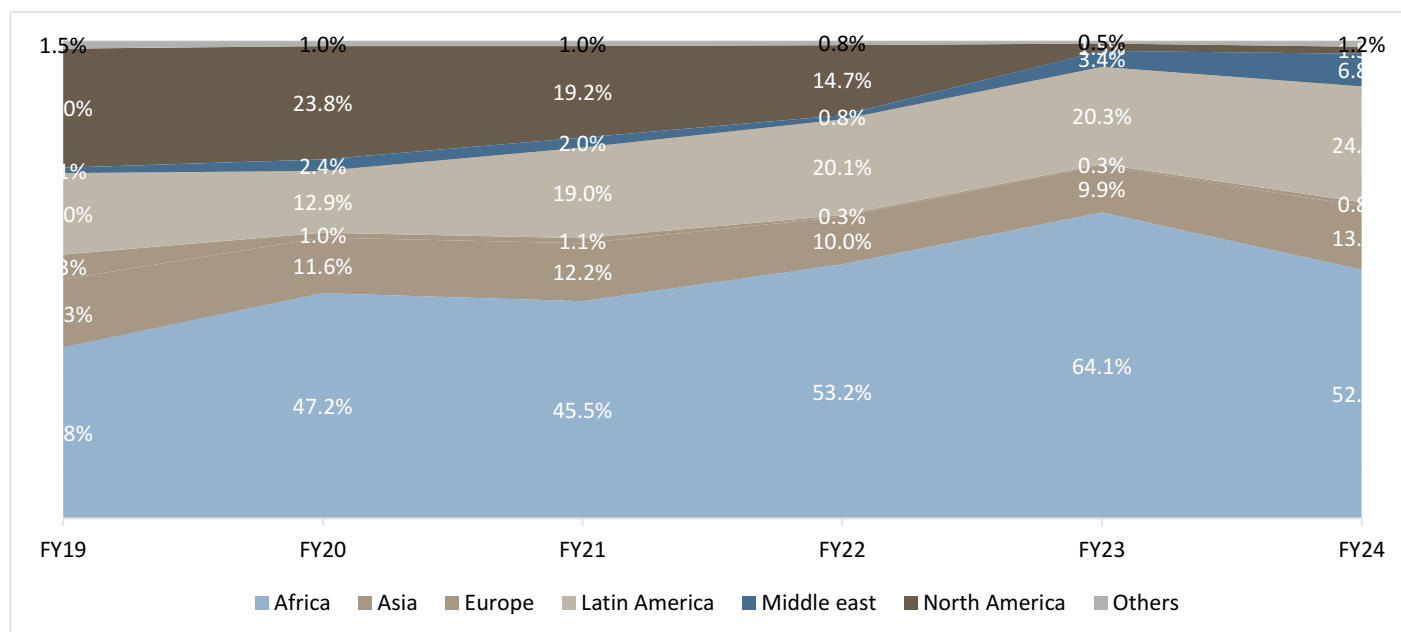
The recent launch of strong hybrid variants for a few models like the Maruti Suzuki Grand Vitara, Toyota Innova Hycross and Honda City has introduced an additional powertrain option for the Indian consumers. Strong hybrid powertrain witnessed healthy traction from consumers looking for increased mileage at relatively limited higher acquisition costs. Lower operating costs, environmental benefits, and relief from uncertainties faced by EV customers like range anxiety or charging station accessibility, have provided a boost to the strong hybrid vehicle retails in the last 2 years.

Review of key export destinations

PV manufacturers from India have grown a stable base in African and Latin American countries over the years owing to good brand recognition of Indian brands for entry level cars. Share of exports to Africa increased to 64% in fiscal 2023 from ~36% in fiscal 2019. South Africa, Tunisia and Angola are the key export destinations within Africa. The share of exports to Latin America also increased in the same period from 17% to 20% due to the increased focus on economies like Mexico, Chile, and Peru. Other top export destinations include Saudi Arabia in the Middle East and Philippines & Indonesia in Asia. Exports to North America have decreased gradually in the past five years. This is primarily due to the quitting of American automakers like GM and Ford from India.

Trade tensions between China and other developed economies including US and Europe coupled with initiatives taken by these countries to diversify their supply chain through various strategies could bring additional attention to export hubs like India. This would offer opportunity for domestic car makers to expand their export reach leveraging government support through various initiatives like FTA, PLI and PMP schemes.

Key export destinations, by region (FY19-FY24)



Source: DGFT, CRISIL MI&A

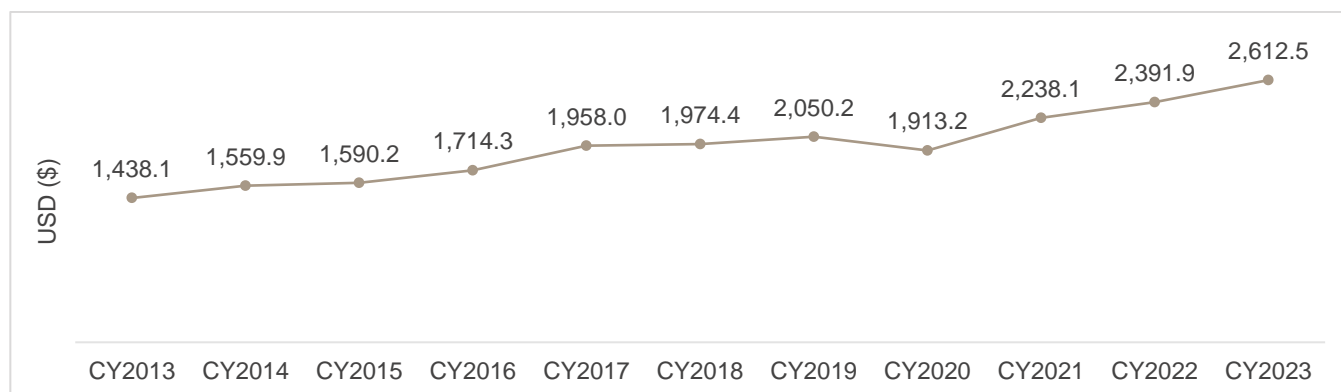
Key historic regulatory/macroeconomic trends and growth drivers for domestic sales

GDP per capita

GDP per capita is Gross Domestic Product (GDP) of a country distributed per person in the population. It is calculated by dividing total GDP by the population. Per capita income shows the increase in income thereby indicating economic well-being and average living standard of population in a country.

India had a GDP per capita of \$2,612.5 in 2023 compared to \$1,438.1 in 2013. It has increased at a CAGR of 6.2% in the last 10 years. In 2020, the GDP per capita decreased by 6.7% owing to the pandemic and nationwide lockdown which impacted the manufacturing and service sector. However, in 2021 these sectors returned to normalcy and GDP per capita increased by 17.0% to reach \$2,238.1. Global dependency on India for production of goods and growing service sector in the country for the past decade has aided this growth. The increase in population along with demand for employment has significantly increased the nation's GDP per capita.

GDP per capita in USD from CY2013-2023



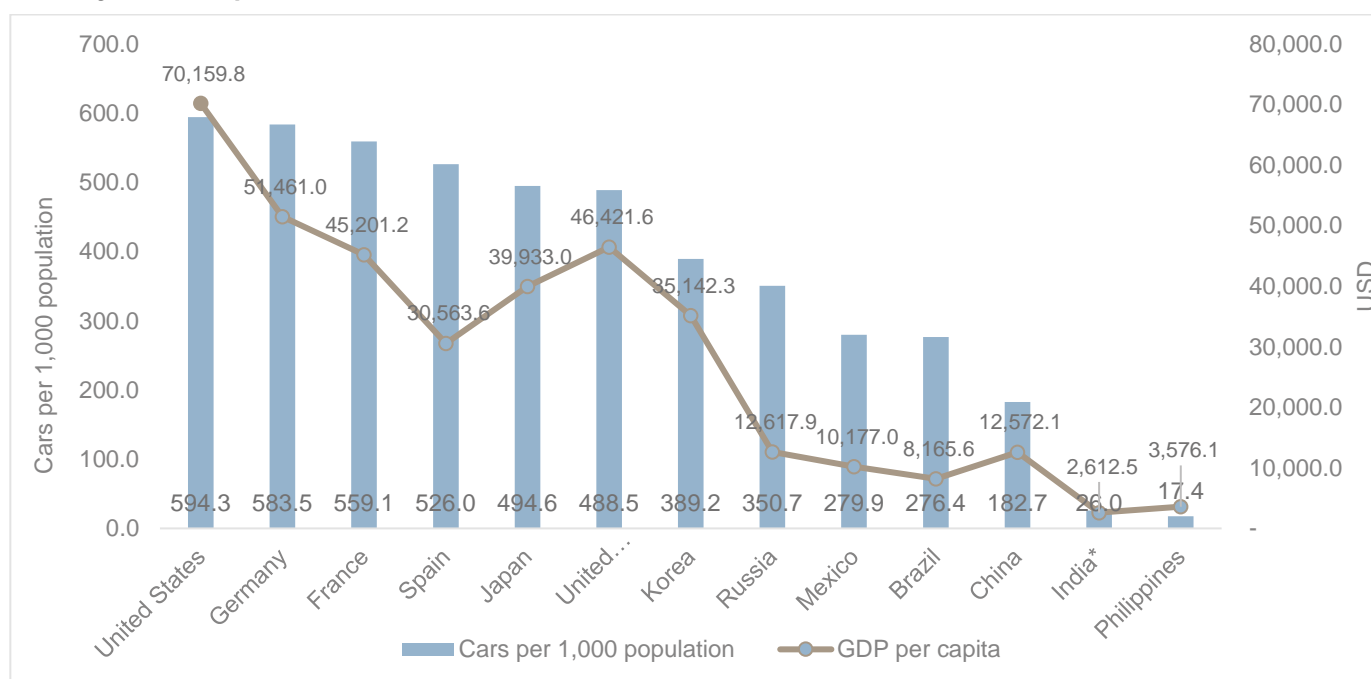
Source: IMF, CRISIL MI&A

Going ahead, IMF expects the GDP per capita to grow at a faster rate of 9.3% and reach USD 4281 levels by 2029. Continued improvement in GDP per capita to aid two-wheeler segment growth over the long-term horizon.

Vehicle Penetration in India

India's car market is extremely underpenetrated compared with most developed economies and some developing nations. The Indian PV market is one of the fastest growing in the world and was ranked second in terms of annual sales (after China) in 2023. However, the market is still highly underpenetrated compared with most developed economies, or even developing countries such as China, Brazil and Mexico. According to CRISIL MI&A, India had 26 cars per 1,000 people as of fiscal 2024. This is significantly lower than the developed nations and even emerging nations like Brazil, Russia, and Mexico. This provides significant headroom for growth, especially given the expected increase in disposable incomes, faster economic growth, younger population, and increased focus from international OEMs. With penetration below the global average, India offers tremendous growth potential for automobile manufacturers.

Country-wise car penetration, CY 2021



Note: Data for CY 2021, India Data for FY24;

Source: International Road Federation- World Road Statistics 2023, CRISIL MI&A

Regulations/ safety norms

Based on European emission standards, the Indian government has introduced the Bharat Stage (BS) norms, which are being implemented in a phased manner in the country. These mandatory norms increase the capital expenditure of the auto OEMs and in turn significantly impact the industry's profitability. Currently BS-VI norms are being followed in India.

The PV industry has been conforming to safety regulations (such as mandatory installation of ABS/CBS, airbags, manual lock in anti-locking systems, seat belt warning system, speed warning system etc.) in new models. This has increased the manufacturing cost per vehicle. However, most car models, other than low-end ones, were already equipped with these safety instruments and for them, the impact will be subdued.

For the BS-VI stage 2 norms, applicable from fiscal 2024, companies have invested in the relevant technology, research, and development, and signed joint ventures (JVs) with global players. The norms resulted in price hike for vehicles across segments owing to the addition of new technologies to meet new emission regulations.

Safety norms

Bharat New Car Assessment Program (BNCAP) was launched by Ministry of Road Transport and Highways (MoRTH) on August 22nd, 2023 with an aim to enhance the road safety of passenger cars by increasing the vehicle safety standards of these vehicles. BNCAP would promote a healthy competition between home grown OEMs and international OEMs to manufacture safer cars along with pushing the safety and quality of the vehicles in India. BNCAP rating system is a voluntary assessment program and came into effect on October 1, 2023.

BNCAP crash testing follows similar methodology followed in the Global New Car Assessment Programme (GNCAP). The testing method aims to offer star ratings to cars based on their performance in crash testing. The BNCAP regime has formulated a new standard, AIS 197 and will offer star ratings on a scale of five, for both adult occupant protection (AOP) as well as child occupant protection (COP) offered by a car in a crash test assessment.

GST tax structure

The government can change the course of the PV industry by changing the tax structure. Through GST, the government reduced tax rates slightly and increased the cess to reduce the price parity with pre-GST regime. The government has been levying high tax on diesel vehicles to discourage use. Consumers prefer diesel vehicles due to the better mileage as against petrol variants. To encourage electric vehicles (EVs), the government has reduced taxes on EVs from 12% tax to 5%, much lesser than internal combustion engine vehicles (28%). Also, the excise duty on petrol is a variable which the government adjusts to control fuel prices, which again has a high correlation with the PV industry sales. Further, the government may aim to lower the GST for hybrids to further minimize the usage of traditional ICE vehicles.

Government boost for Compressed natural gas (CNG)

In fiscal 2023, the government had increased the price of domestic natural gas to \$6.1 per metric million British thermal unit (mmBtu) in first half of fiscal 2023 and increased further 40% to \$8.57 per mmBtu in second half of fiscal 2023 following elevated gas prices at international level on account of the Russia-Ukraine war. On April 6, 2023, the Cabinet Committee on Economic Affairs chaired by Prime Minister Narendra Modi approved a revised pricing mechanism for natural gas produced in India, based on the recommendations made by the Kirit Parikh Committee in December 2022. The committee evaluated ways to boost natural gas production and ensure availability and affordability for end-users. The recommendations by the committee focused on price capping, deregulating the gas market, and bringing natural gas under the goods and services tax (GST) umbrella.

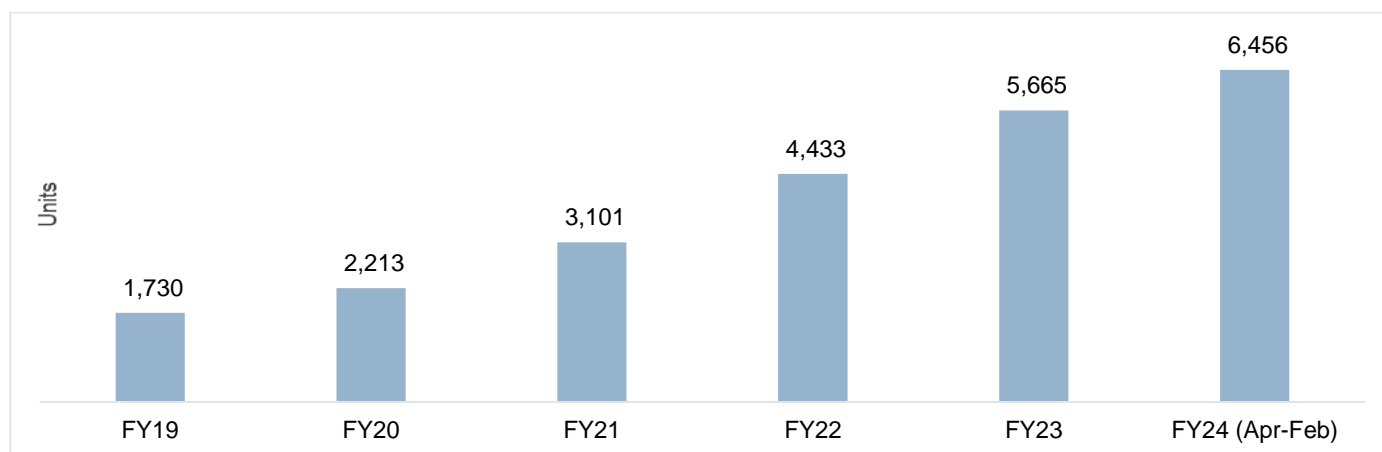
With the new pricing mechanism, the domestic gas price was capped at \$6.5 per mmBtu for the fiscal 2024. Thus, CNG prices declined by 4% to Rs 74/kg fiscal 2024. This decline in prices resulted the difference in total cost of ownership between diesel and CNG, favouring CNG transition and hence the long-term prospects for CNG adoption remain promising.

Fluctuating fuel prices and potential government incentives for eco-friendly alternatives could potentially ignite demand for CNG-powered vehicles. Moreover, advancements in CNG technology and the expansion of refuelling infrastructure may enhance the appeal of CNG models, offering a greener and more sustainable solution for the transportation sector.

As of fiscal 2023, a total of 21.9 thousand km length of gas pipeline was operational under multiple commissioned City Gas Distribution (CGD) projects, and a total of 33.1 thousand km stretch was under construction. A target of

setting 17,700 CNG stations in urban and rural areas by 2030 was also set. In fiscal 2023, an additional 1,232 new stations were added, taking the total number of CNG stations to 5,665. Between fiscal 2019 and 2023, the number of CNG stations grew at a CAGR of 34.5%.

Number of CNG Stations, FY19-FY24 (Apr-Feb)



Note: For FY24 - April 2023 to February 2024 period as updated on PPAC

Source: Petroleum Planning & Analysis Cell (PPAC), CRISIL MI&A

According to PPAC, as of fiscal 2023 there were around 86,855 retail fuel outlets in India. As of 1st June 2024 this number increased to 90,334. The availability of refuelling infrastructure for traditional fuels are also on the rise, however, on a lower rate compared to CNG and EVs.

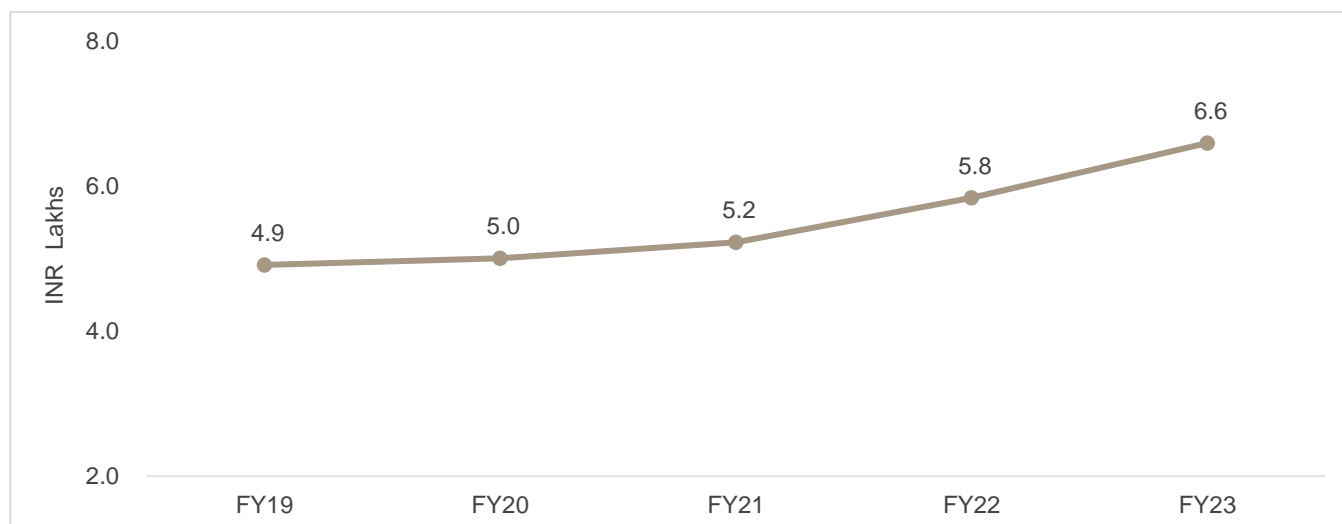
Premiumization trend

The average selling price (ASP) between fiscal 2019 and 2023 increased at a CAGR of 7-8% because of premiumization trend as well as sharp rise in vehicle prices. Modern consumers in India are preferring mid-end or top end version of the vehicles moving away from the traditional fuel-efficient budget friendly small cars towards higher priced feature loaded larger cars which offer much more space, taller ride height, seamless connectivity, and improved performance. Further, there has been a major shift in customer preference with the launch of compact and mid-size SUVs. The share of small cars (hatchbacks) reduced from 46.9% in fiscal 2019 to 34.4% in fiscal 2023. During the same period, share of SUVs increased from 23.1% in fiscal 2019 to 44% in fiscal 2023.

This was majorly driven by shift in consumer sentiments towards newly launched feature rich vehicles in the SUV segment.

Increase in spending from the upper middle class after pandemic led to more purchases of SUVs supported by higher number of models launches in the SUV category (which have higher profit margins) and increase in affordability with launch of compact SUVs led to cannibalization of hatchbacks and compact sedans.

Trend in average vehicle price (ASP)



Note: Based on OEM factory cost;

Source: CRISIL MI&A

The rise in penetration of digital technologies and safety features in the vehicles also aid this ASP growth. There is a growing adoption of cars equipped with sunroof, digital infotainment systems and smart phone connectivity solutions. Modern car buyers who are aware of the safety standards are preferring cars equipped with necessary features like airbags, disc brakes and so on. These systems coupled with inclusion of modern LED lights, camera and radar systems are increasing the overall cost of a vehicle. For example, Hyundai Motor India introduced sunroof in their i10 and i20 hatchbacks back in 2008-09. From then till now, most of the models offered from the company provides sunroof as an option and the company has played a crucial role in popularising modern features in India.

Over and above these features, industry has also started offering connectivity as an add on feature in their latest offerings especially in the top variants. These connectivity features enable seamless interaction between the user and the vehicle through their application. Few of the features include remote start stop, remote HVAC (Heating Ventilation and Air Conditioning) control, real time location services etc. Such features are available in vehicles like MG Hector, Hyundai Venue, Creta, Tata Harrier/Safari, Mahindra XUV700, Maruti Grand Vitara to name a few.

Moreover, apart from the standard safety features, many of the OEMs are also offering advanced driver assistance and safety features through ADAS (Advanced Driver Assistance System) technology. The basic ADAS features include blind spot detection, emergency braking, cruise control, lane departure warning etc. These additional features are currently being offered in premium vehicles like Honda City, Kia Seltos, MG Hector, Hyundai Creta, Mahindra XUV700 and Tata Safari. Currently most OEMs in the mass market² offer level 2 (L2) ADAS capability through their in house ADAS technology like Hyundai SmartSense and Honda SENSING.

All these additional features have also aided the premiumization within the passenger vehicle industry.

New model launches

Apart from increasing sales of existing models, sales of new models have supported the overall industry's growth in the past decade, thereby driving demand. Most recent launches were mostly SUVs, which accelerated growth of the industry. As of fiscal 2023, a total of 10 new models were launched in various segments. These new models contributed to 3.1% of overall PV sales in that fiscal. Few of the notable model launches includes Maruti Suzuki

² Mass market refers to OEMs whose domestic sales, exports and production data is captured monthly and annually by SIAM

Grand Vitara, Toyota Urban Cruiser Hyryder, Volkswagen Virtus, Innova Hycross and Hyundai Ioniq 5. In fiscal 2024, a total of 9 models were launched that contributed to over 6.6% of PV sales. Key model launches include Maruti Suzuki Fronx, Hyundai Exter, Honda Elevate and MG Comet EV. Going forward, the new vehicle pipeline is expected to provide additional thrust to domestic sales.

Current EV penetration in Passenger Vehicles

Amid rising environmental concerns, electric vehicles (EVs) are gaining traction globally, including in India. The country is one of the signatories to the Paris Agreement under the United Nations Framework Convention on Climate Change. It is also part of the EV30@30 campaign, targeting a 30% sales share for EVs by 2030.

To accelerate EV adoption, the government has been incentivising consumers by extending support via FAME (Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India) subsidy as well as tax cuts. The government announced INR 100 billion for Phase II of FAME, which commenced on April 1, 2019. The policy aims to provide a subsidy of INR 10,000 per kWh to four-wheelers (battery EVs, plug-in hybrid EVs, strong hybrids) for commercial purposes and public transport. It also envisions creation of infrastructure for charging of EVs.

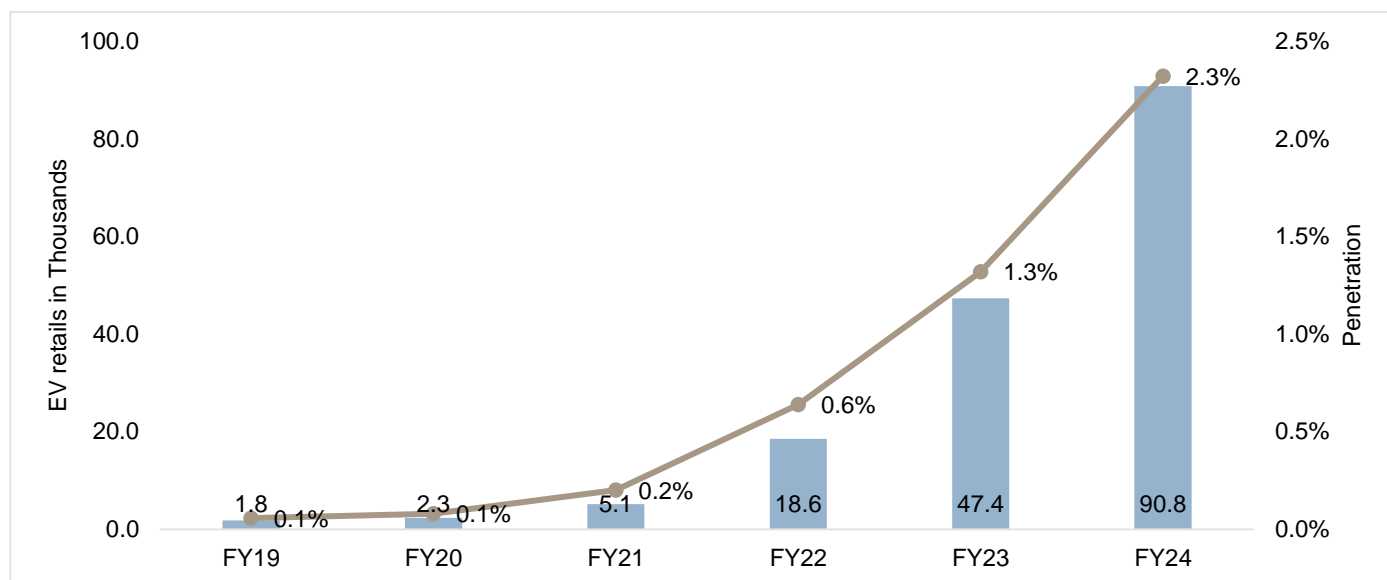
These schemes alongside the Production Linked Incentive (PLI) schemes, scrappage policy as well as the Make in India initiative is setting up the roadmap for widespread EV manufacturing and adoption. (Policies have been covered in detail in earlier sections)

Furthermore, the government is taking measures to address one of the major concerns regarding EVs: range anxiety (fear of running out of charge in the middle of the journey) due to low availability of public charging infrastructure. To address this concern, and support an ecosystem to accelerate EV sales, the Ministry of Road Transport and Highways is setting up new EV charging stations as well as supporting the expansion of charging stations in homes and commercial centers.

Government support, coupled with rising awareness about EVs, environmental concerns, expansion in EV infrastructure as well as increasing EV model portfolio is driving electrification in India. The EV segment received a real thrust in the last two years backed by model launches at competitive rates, price hikes in ICE vehicles and elevated & petrol diesel costs. While EVs bring several cost benefits and have evolved into a desirable powertrain choice today, the public perception towards electric vehicles and awareness against pollution from ICE vehicles also played a major role behind the rise in EV adoption across the country.

EV adoption in India is led by two wheelers and three wheelers, however, passenger vehicles are fast catching up. EV penetration in the passenger vehicle (PV) segment was insignificant till fiscal 2021 amidst limited vehicle portfolio coupled with lower customer awareness. Fast expansion in portfolio (3 models in fiscal 2019 to about 14 models in fiscal 2024), rising awareness, government push and expanding supporting infrastructure caused a sharp rise in EV adoption. EV retails increased from about 2 thousand vehicles in fiscal 2019 to 89 thousand vehicles in fiscal 2024: a 45x increase in 5 years. In turn, the penetration of EVs within the industry retails rose from 0.1% in fiscal 2019 to 2.3% by fiscal 2024.

Domestic passenger vehicles EV retails and penetration trend



Note: VAHAN figures exclude Telangana, Lakshadweep retails

Source: VAHAN, CRISIL MI&A

With only a handful of vehicle options like Reva, E Verito, and Bolt, EV adoption in passenger vehicles was inconsequential in fiscal 2019. One of the most popular EVs in India, Nexon EV was launched in the second half of fiscal 2020 providing the thrust to the passenger vehicle EV adoption. The launch of Kona electric (H1 fiscal 2020) as well as ZS EV (H2 fiscal 2020) provided further boost to the vehicle adoption during fiscal 2020. Continued traction for these models helped EV retails clock a sizeable growth during fiscal 2021. However, pandemic decelerated the growth pace of EVs, given the higher acquisition costs, strained production levels as well as financial pressure on the consumers.

Real impetus to the EV adoption started from fiscal 2022. Gradual normalization of economy, improvement in macro-economic scenario, increase in mobility, expansion in EV portfolio and continued government support aided the EV adoption growth. Moreover, further rise in ICE vehicle prices, sharp hike in petrol diesel prices, increasing in customer awareness and younger buyers provided an added impetus to EV adoption.

Entry of new players like BYD as well as introduction of models like Tiago EV, Tigor EV, Punch EV, XUV400, Comet EV, eC3, Ioniq, Atto 3 in a short span provided the thrust to the EV adoption. In fact, with the introduction of Tiago, Comet in the hatchbacks segment and Tigor in the sub 4-meter sedan segment, expanded the customer reach for EVs. Traction for Tigor for commercial fleet usage further aided the EV growth.

During fiscal 2021 to fiscal 2024 period, EV retails increased at ~160% CAGR (17x). This sharp rise in EV retails translated into 2.3% EV penetration in fiscal 2024.

However, electrification in the passenger vehicle segment is still at a quite nascent stage and there is a sizeable scope of expansion going ahead.

5.2. Outlook of Indian passenger vehicle Industry (fiscal 2024 to 2029)

The domestic passenger vehicle industry grew at a 5% CAGR during fiscal 2019-24 period. Despite the pandemic hiatus, the industry achieved this growth from a record high base of fiscal 2019; led by the sharp rise in traction for

the SUV segment, increased vehicle launches coupled with the entry of newer players. Relatively lower impact on disposable income of the upper middle class led to a significant growth in the SUV segment driving overall PV sales. In turn, the industry reached a historic high of about 4.2 million vehicle sales in fiscal 2024.

Despite this healthy growth, India's car penetration (26 cars per 1000 people- fiscal 2024) is still much lower than the car penetration of global peers like China (183), Mexico (280), Brazil (276) as well as of developed countries like United States (594), UK (489), Japan (495) and Korea (389). Thus, there is a lot of headroom for growth for the Indian domestic market.

Going ahead, CRISIL expects the macroeconomic scenario to lend support to the industry growth with GDP projected to grow at a healthy pace between fiscal 2024 to fiscal 2029. India's GDP growth is expected to outperform other major geographies in the next 5 years with an expected growth rate of 6-8%. India's inflation levels are also expected to remain subdued in the 3-5% range, which is within the RBI's target band. CRISIL has assumed 3 years of normal monsoons within the 5-year outlook period and has considered positive momentum in rural demand. Fuel prices are also expected to remain near steady in the next 5 years. These favourable macro-economic factors are expected to aid the consumer disposable income levels.

Besides the macro-economic factors, continued support from government in terms of policies as well as continued expenditure & investments are expected to provide an added support. The favourable demographics is an added advantage for India which is also expected to help propel the passenger vehicle industry forward.

Additionally, OEMs are expected to continue with launches of feature rich competitively priced vehicles aiding the overall demand growth.

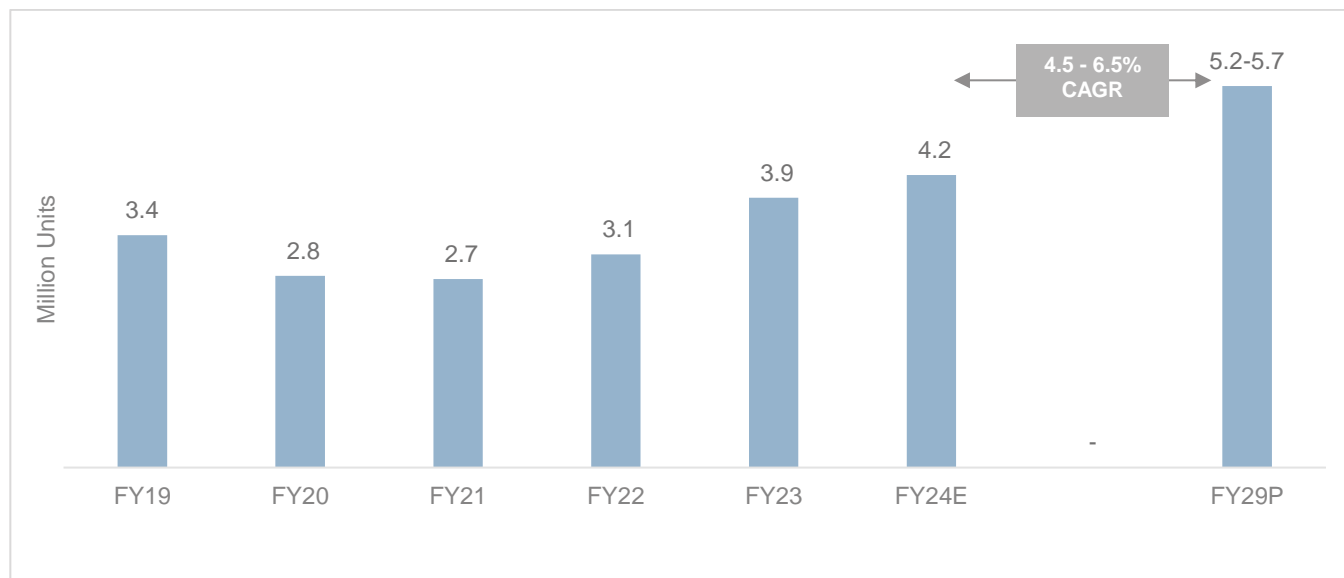
The financing scenario is projected to remain favourable for the industry and will lend further support amidst expanding financing reach and high Loan to Value (LTV) levels. Moreover, after multiple rate hikes in the last 2 years, a rate cut of 25-50 bps is expected in the near term keeping the interest rates competitive in the short-term horizon. Given the subdued inflation levels projected for the long-term horizon, a further rate hike seems unlikely.

The changing consumer dynamics including younger consumer base, premiumization, electrification, shorter replacement cycles (4-5 years currently vis a vis 7-8 years a decade ago) will provide further impetus to the demand. Additionally, the government's push for scrapping of old vehicles is expected to help in shortening replacement cycles and hence aid demand.

Over and above these demand drivers, the capacity expansion by players like Maruti Suzuki, Hyundai, Tata Motors is expected to support the growing vehicle demand. Moreover, the expansion in the supporting infrastructure like EV charging stations and CNG pumps will also aid choices for customers across powertrains.

CRISIL MI&A expects the industry to clock 4.5-6.5% CAGR between FY24 to FY29 period to reach 5.2-5.7 million domestic vehicle sales.

Domestic PV Industry outlook (volumes)



Source: SIAM, CRISIL MI&A

Segmental Outlook

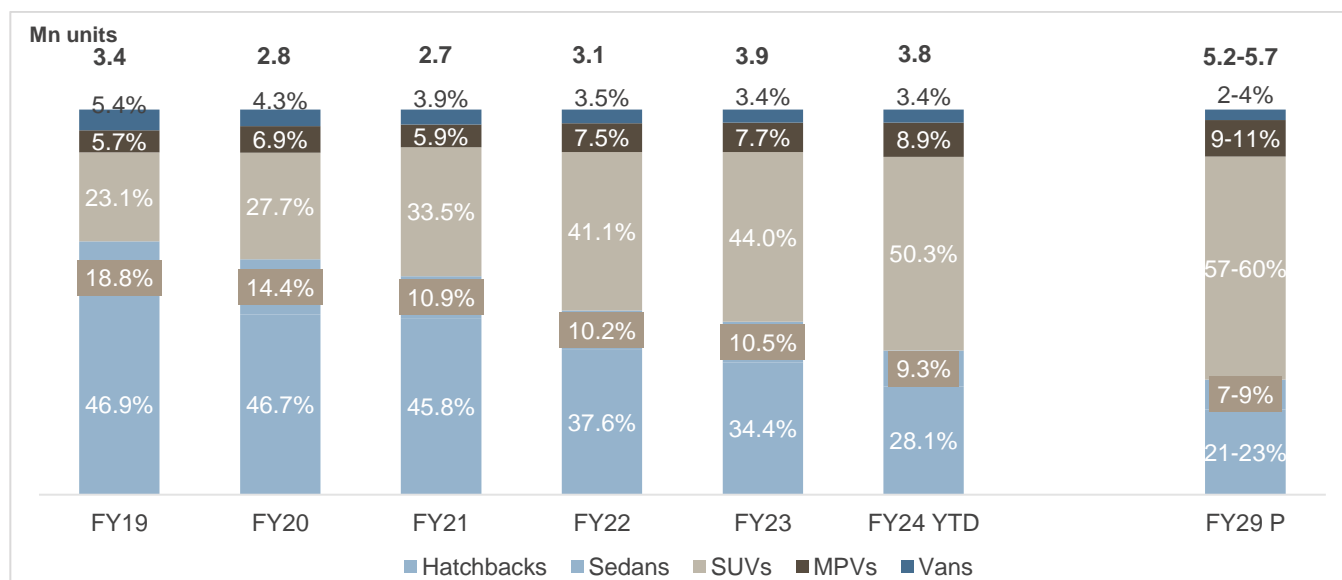
Growth in the domestic industry is expected to be led by the SUV and MPV segments while the hatchback, sedan and vans segments are expected to clock muted growth going ahead.

Segmental growth outlook

Segment	FY19-FY24 CAGR	FY24-FY29P CAGR
Hatchbacks	(6) %	0 - 2.0%
Compact Hatchbacks	(8) %	(1) -0.5%
Premium Hatchbacks	0%	1.5 - 4.0%
Sedans	(9) %	0.5 - 2.0%
SUVs	23%	7.0 – 9.0%
Compact SUVs	23%	6.8 - 8.8%
Mid-Size SUVs	24%	7.8 – 10.0%
Large SUVs	21%	7.2 – 9.2%
MPVs	14%	6.4 - 9.4%
Vans	(5) %	1.1- 2.0%
Total	5%	4.5 – 6.5%

Source: SIAM, CRISIL MI&A

Industry segmental split outlook

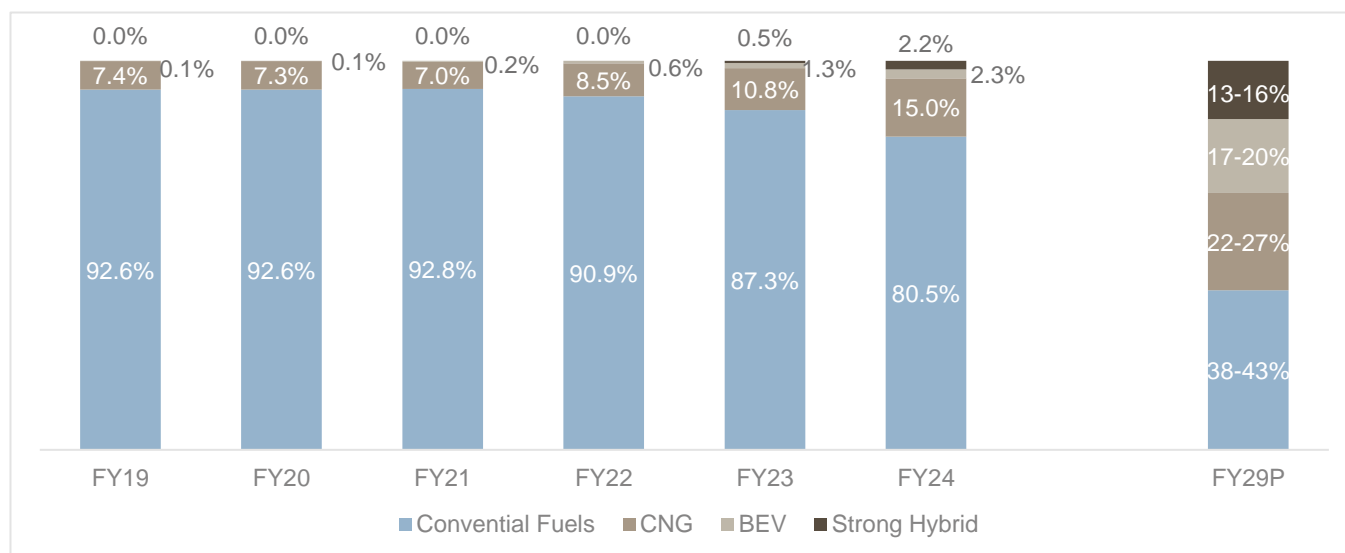


Source: SIAM, CRISIL MI&A

Outlook on the Powertrain mix of the industry

Indian domestic passenger vehicle industry, which was completely dominated by the conventional fuels, has witnessed fast acceptance of alternate fuels especially in the last 2/3 years. In fact, the share of CNG powertrain doubled to 15% while EV (2.3% share) and the latest addition, strong hybrids (2.2% share) expanded their presence in the vehicle retails. Going forward, CRISIL MI&A expects the share of alternate fuel vehicles to witness a multi-fold growth while the conventional fuel vehicle's share will slide.

Powertrain wise Outlook of the industry



Note: Strong hybrid: Vehicles having a combustion engine as well as an electric motor. The vehicle can be powered by the engine, by the battery, or by both simultaneously. Battery of the vehicle is charged by the combustion engine and not by an external power source. Telangana & Lakshadweep retail data is not available on VAHAN.

Source: VAHAN, CRISIL MI&A

By fiscal 2029, CRISIL MI&A projects the share of CNG variants to rise to 22-27% from the 15% share clocked in fiscal 2024. Healthy growth in CNG station infrastructure will primarily thrust the growth of CNG vehicle share. Amidst the government's push coupled with the support of City Gas Distribution- CGD players, completion of

commitments under the CGD rounds is expected to pick up pace. Thus, CNG station infrastructure is projected to rise at a healthy pace till 2030.

Over and above the expansion in station infrastructure, the prices of CNG fuel are expected to remain subdued as per the Kirit Parikh panel recommendations, thus providing an added boost to the CNG vehicle demand.

This has also led to expansion of the vehicle portfolio by players, especially in the premium segments like premium hatchbacks, compact SUVs and mid-size SUVs wherein they have announced future launches. This will lend further incentive to the CNG buyers.

Electrification is another trend witnessed in the Indian domestic passenger vehicle market in the last 2/3 years. Plethora of vehicle launches, expanding charging infrastructure and continued government support will aid further growth of electrification in India going ahead. CRISIL MI&A expects the EV penetration to reach 17-20% (approx. 1 million units) by fiscal 2029 from the 2.3% penetration (~90 k units) seen in fiscal 2024.

Off the low base, EV charging infrastructure is projected to grow at 58-63% CAGR in the next 5 years (covered in detail in the EV subsection). Moreover, most OEMs have planned 5-8 EV launches each in the medium term to cater to the expanding EV demand. These vehicle launches are expected to be across subsegments as well as across body types catering to multiple price points and in turn multiple customer bases. Additionally, the expected reduction in battery prices and increased production efficiency will lend further support in optimizing the EV prices. Furthermore, entry of global players like Tesla & VinFast will also aid electrification in the longer term.

However, for EVs, range anxiety, limited charging infrastructure, import dependency on certain components, higher import duties and underdeveloped local supply chain are few bottlenecks.

The recent entry of strong hybrid vehicles such as Maruti Suzuki Grand Vitara, Maruti Suzuki Invicto, Toyota HyRyder, Toyota Hycross and Honda City have witnessed fast acceptance due improved mileage, environmental benefits coupled with absence of EV concerns like range anxiety, limited charging infrastructure, etc. In the last 2 years, strong hybrid powertrains have grabbed ~2% share of the annual retails of the PV industry.

In the long-term horizon, CRISIL MI&A projects higher traction for strong hybrids, further buoyed by attractive hybrid offerings, OEM focus, infrastructure availability and government support. Proposed launches³ of strong hybrid variants of popular models by Maruti Suzuki like Fronx, Baleno, Brezza, Swift and Dzire, Renault Duster, Toyota Fortuner, Nissan X-trail will aid the demand from customers. By fiscal 2029, strong hybrids are projected to contribute about 13-16% to the industry retails.

PV Exports Outlook for India

Passenger vehicle exports from India is expected grow at 3.1% in fiscal 2024 and at a CAGR of 7-9% between fiscals 2024 and 2029. Anticipated economic growth in key export regions along with push from OEMs will make India the base of exports for certain models, which in turn will boost exports. While the outlook for Middle East and Asia remains positive, the ongoing Iran-Israel conflict would remain a key monitorable. Any escalation of the conflict could push the oil and gas price alongside impacting the shipping through the Strait of Hormuz. Rise in crude oil prices could impact the fuel prices in export destinations thereby increasing the inflation pressure and impacting exports demand from India.

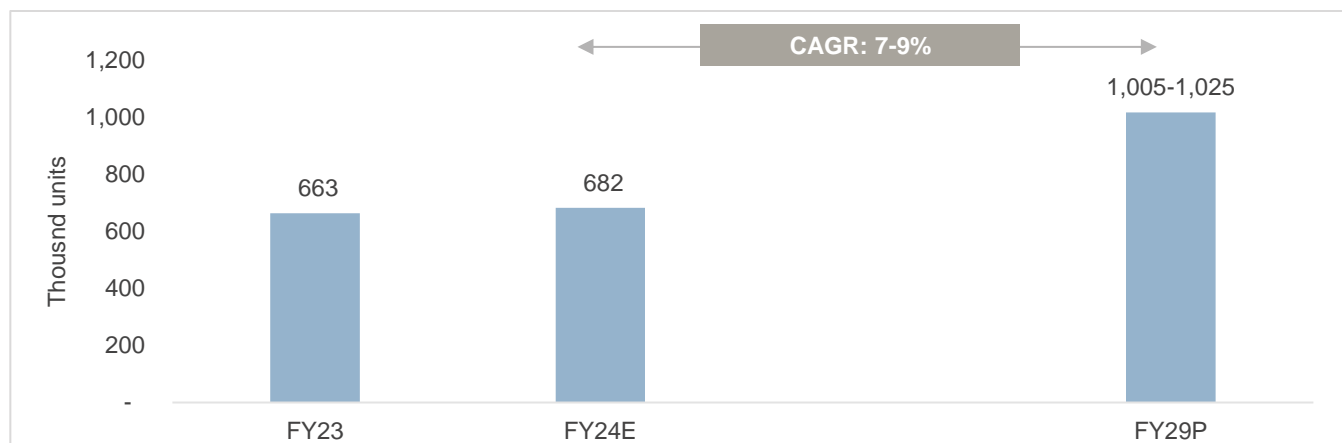
Few years back, India was major export hub for cars like hatchbacks and compact sedans. However, India has successfully transitioned to be a large car (Premium sedans and SUVs) exporter over the last 5-6 years. OEMs are actively broadening their portfolios to cater the changing consumer preferences in both domestic as well as global markets. SUV sales are accelerating exports and models like the Hyundai Creta, Maruti Suzuki Grand Vitara, Hyundai Venue, Toyota Urban Cruiser HyRyder, Maruti Suzuki Jimny, Maruti Suzuki Fronx, and Volkswagen Taigun

³ Not confirmed by OEMs, information available from other secondary sources

have gained strong traction in the export markets. Further premium sedans like the Hyundai Verna and Volkswagen Virtus are key models driving the market for large cars.

Major OEMs in India are expanding their production capacities with an aim to make India as an export hub for Africa, Middle East, and Asia. Further, policies including PLI are offering a momentum to domestic OEMs for manufacturing and exporting EVs from India. Government offers incentives through PLI for entire EV ecosystem including automobiles, auto components and ACC batteries. Major OEMs in India have already announced plans to export EVs from India starting 2025-2026.

Outlook for exports (FY23-FY28P)



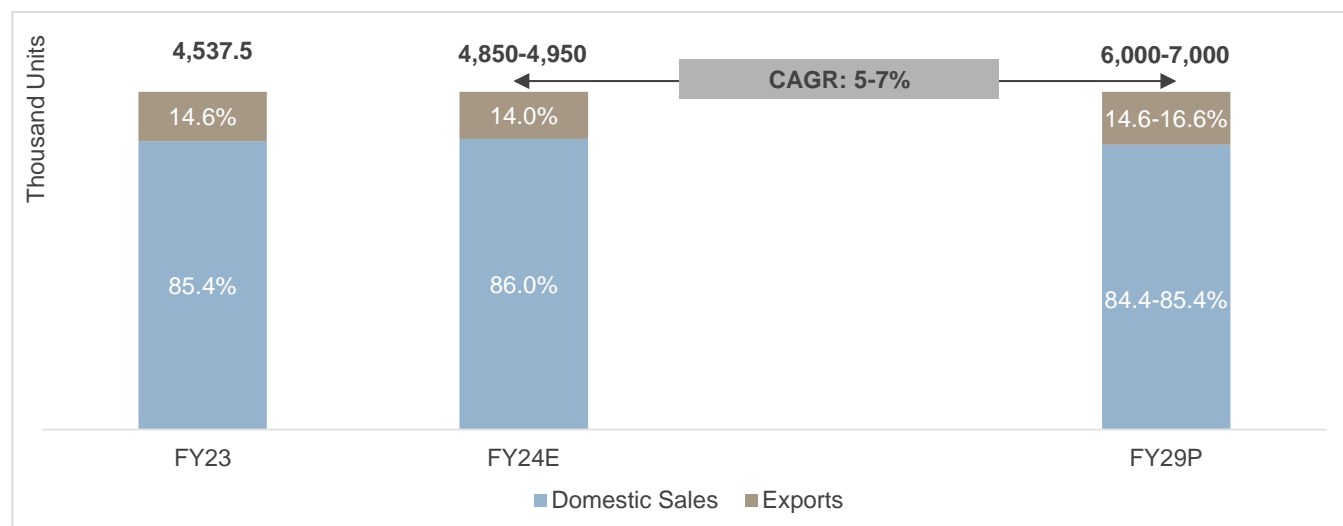
Source: CRISIL MI&A

India's economic relations with global economies through different trade agreements would enable Indian automotive companies to enhance the exports of automobiles and related components from the country. Recently India has established FTA with several nations including the UAE and Australia. India is also negotiating with the UK and the EU on establishing FTA. FTA agreements will offer immense potential to Indian OEMs, enabling them to tap into a broader customer base and establish as a key player in the global automotive industry. SUVs are gaining strong traction in the global markets and their exports are on the rise. This momentum is expected to continue this decade with SUVs crossing 40% share in exports and remain the fastest growing segment. Rising disposable income supported by lowering inflation growth rate in key export destinations like South Africa, Mexico and few others are expected to further aid the growth of SUVs, and overall exports.

Overall PV industry – Domestic Sales + Exports

Domestic sales, which formed 85.4% of overall industry in fiscal 2023, is expected to grow at 4.5-6.5% CAGR between fiscals 2024 and 2029P. Over the period, exports are forecast to grow at 7-9% CAGR reaching a share of 15.6% by fiscal 2029.

Overall PV industry by domestic sales and exports (FY23-FY29E)



Source: CRISIL MI&A

Estimated penetration of Electric PV segment wise by FY29

As it stands, the FAME-II subsidy is incentivised only towards commercial use. No benefits are provided to personal car owners.

In case of commercial applications such as cab aggregators, as of fiscal 2023, the total cost of acquisition (TOA) of an EV is 10% higher as compared with diesel, 19% with petrol and 12% with CNG. However, due to high annual running, the TCO for EVs is 14% lower when compared with diesel taxis and 18% when compared with petrol taxis and is almost at par with CNG cabs. However, due to heavy running of the vehicles, the TCO of EVs for cab aggregators is lower for EVs compared with diesel alternatives but higher than CNG alternatives even in fiscal 2023. By fiscal 2026, CRISIL MI&A Consulting expects the TCO for EVs to be lower than diesel alternatives and marginally lower than CNG. The lower battery cost is expected to offset the lack of FAME subsidy and will help maintain competitiveness of BEVs against diesel and CNG variants for cab aggregators.

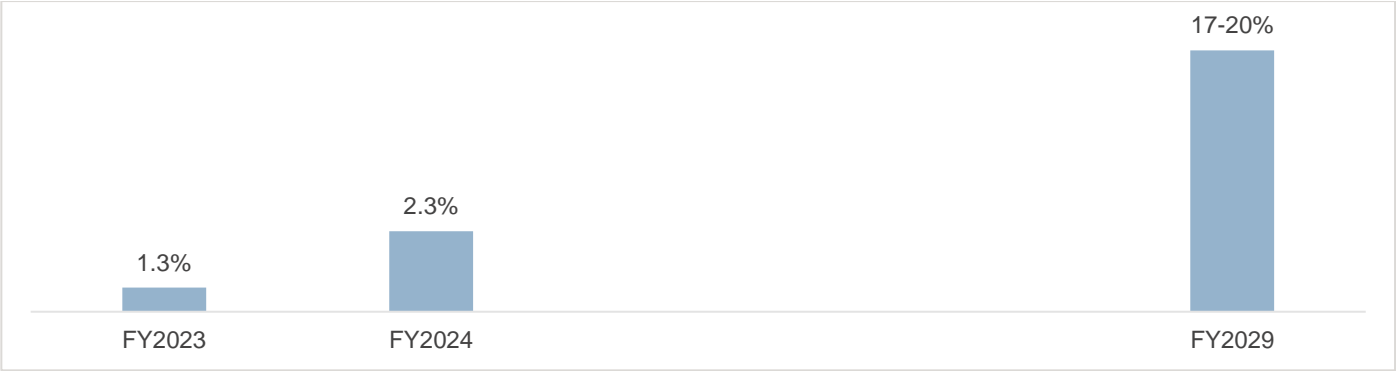
CRISIL MI&A Consulting believes the lack of charging infrastructure, range anxiety and lack of large OEM presence is hindering EV adoption in India. The taxi segment accounts for 10-15% of sales within passenger cars. Within the taxi segment, cab aggregators are expected to lead EV adoption, resulting in an estimated 25-31% adoption of EVs within this segment by fiscal 2027 (considering that adequate infrastructure is available by fiscal 2027).

The TOA and TCO of electric personal cars are still higher compared with the petrol alternative due to their lower running costs. Therefore, EVs are currently not a viable use-case. However, the gap is expected to shrink in fiscal 2029, driving EV adoption in personal usage segment. In addition, availability of charging infrastructure and range, especially for intercity travel, are likely to be key deciding factors for EV adoption in the personal car segment.

Hence, CRISIL MI&A Consulting expects the share of EVs in total passenger car sales to reach 12-14% in fiscal 2029. Penetration in fiscal 2023 was 1.2%.

EV penetration can be higher if the government adopts stricter policies on OEMs for not meeting CAFÉ norms. The exact quantum of EV penetration in an aggressive case depends on incentives given for adoption and setting up of charging infrastructure.

EV penetration outlook for passenger vehicles



Source: CRISIL MI&A Consulting

6. Review of and outlook on the Indian Commercial vehicle industry

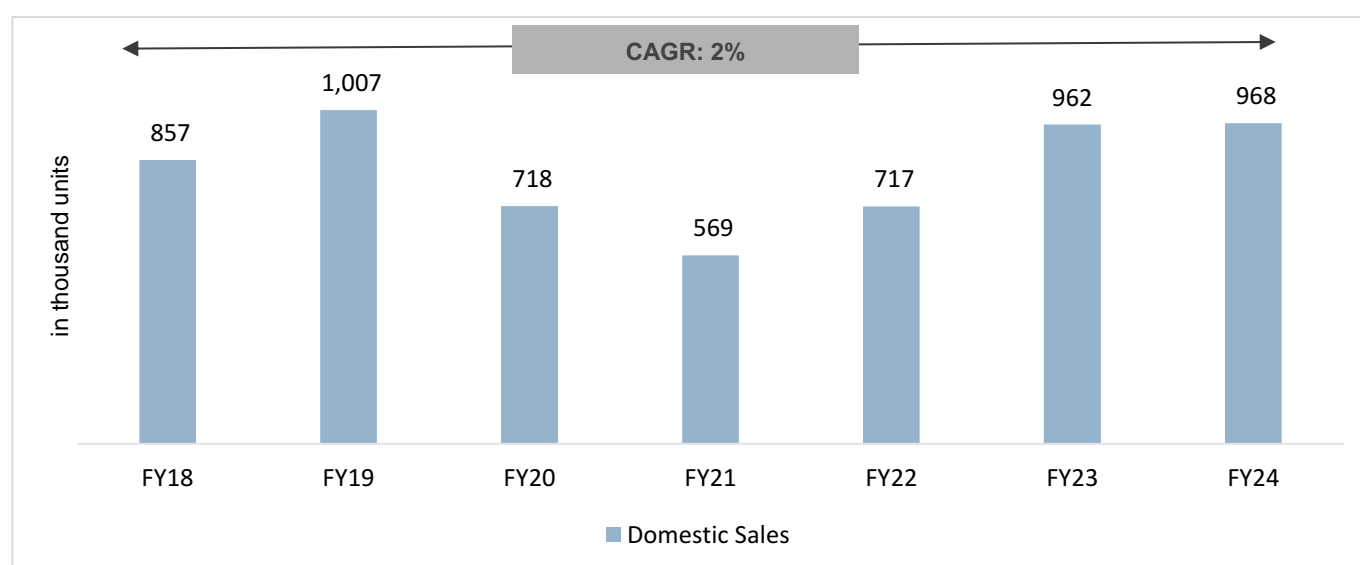
6.1. Review of Indian commercial vehicle industry

Between fiscals 2018 and 2024, domestic CV sales logged a CAGR of 2%. The CV industry exhibited a noteworthy recovery in fiscal year 2023, achieving a remarkable growth rate of 35%, albeit on a low base, and reaching 96% of the pre-pandemic levels observed in fiscal year 2019. This resurgence can be attributed to pent-up replacement demand, improved transporter profitability, and the pick-up in capex that had been hampered during the preceding 2-3 years due to economic stagnation and the disruptive impact of the pandemic.

In fiscals 2018 and 2019 witnessed strong recovery as compared to 2016-17 and a healthy 18-20% growth, supported by the government's focus on road and housing infrastructure development. In fiscal 2020, the industry witnessed a sharp de-growth on a high base, due to inventory adjustment on account of the transition to BS-VI emission norms. In fiscal 2020, demand for buses was impacted due to safety regulations (emergency exit doors, fire detection and suppression, escape hatches and emergency lighting).

The pandemic brought the entire economy to a grinding halt when a nationwide lockdown was declared to contain its spread, thus affecting the profitability and sustainability of transporters due to lack of availability of freight demand. The industry, however, gained momentum afterwards as consumption demand and industry activity started gaining pace.

Review of commercial vehicle industry



Source: SIAM, CRISIL MI&A

Segmental Trends

During fiscal 2018-2021, industry sales contracted at 13% CAGR amidst the 28% drop in fiscal 2020 followed by further 21% contraction seen during fiscal 2021 due to the pandemic. Over the last five years, the industry weathered major challenges on account of events such as demonetization, NBFC crisis, implementation of axle

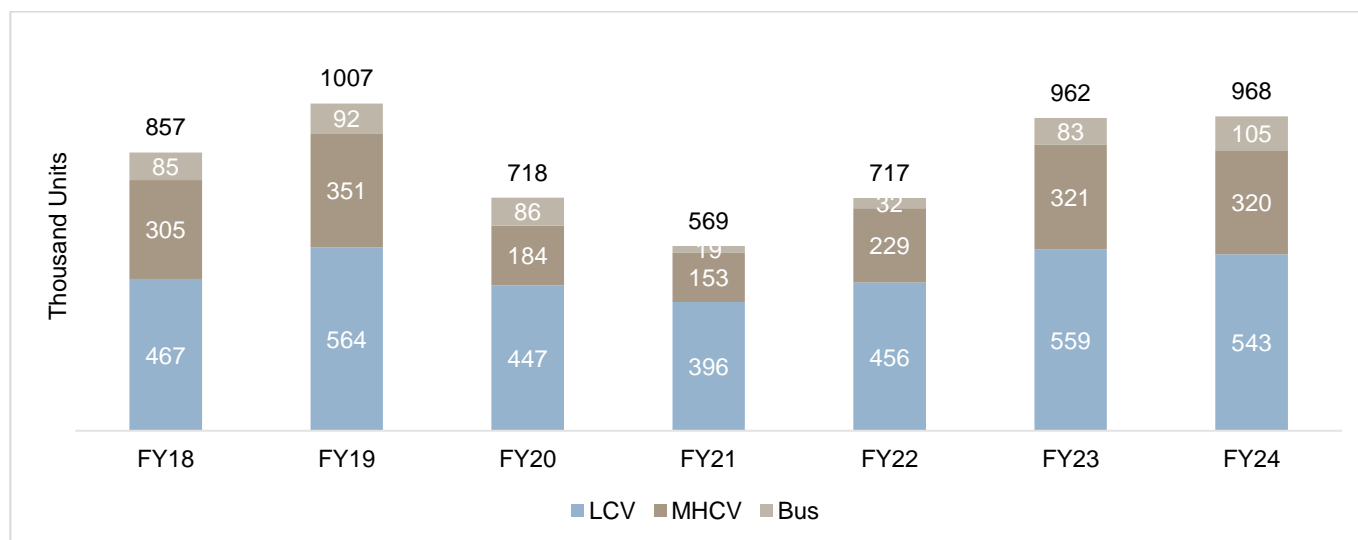
load norms, changes to insurance norms and transition to BS-VI emission norms. A culmination of these multiple factors, particularly post the second half of fiscal 2019, resulted in a dampening of demand for CVs.

During the pandemic, due to the limited mobility, demand for buses was hit significantly contracting at 39% CAGR during fiscal 2018-2021 period. In fiscal 2020, demand for buses was impacted due to safety regulations (emergency exit doors, fire detection and suppression, escape hatches and emergency lighting) that led to an increase of ~Rs 50,000 in the cost of ownership. This was after a price hike of ~Rs 15,000 due to mandatory installation of vehicle tracking system and panic buttons in January 2019.

After the price rise, demand for buses was also hit by weakening private consumption in fiscal 2020, hampering demand from tourist bus operators and inter-city travel operators. Weak corporate hiring and production cuts in manufacturing also impacted demand for corporate staff buses. However, school and route permit buses have shown some resilience in fiscal 2020. Demand from state transport undertakings (STU) ramped up in the second half of fiscal 2020 as STUs looked to replace much of their older fleet before the BS-VI price rise.

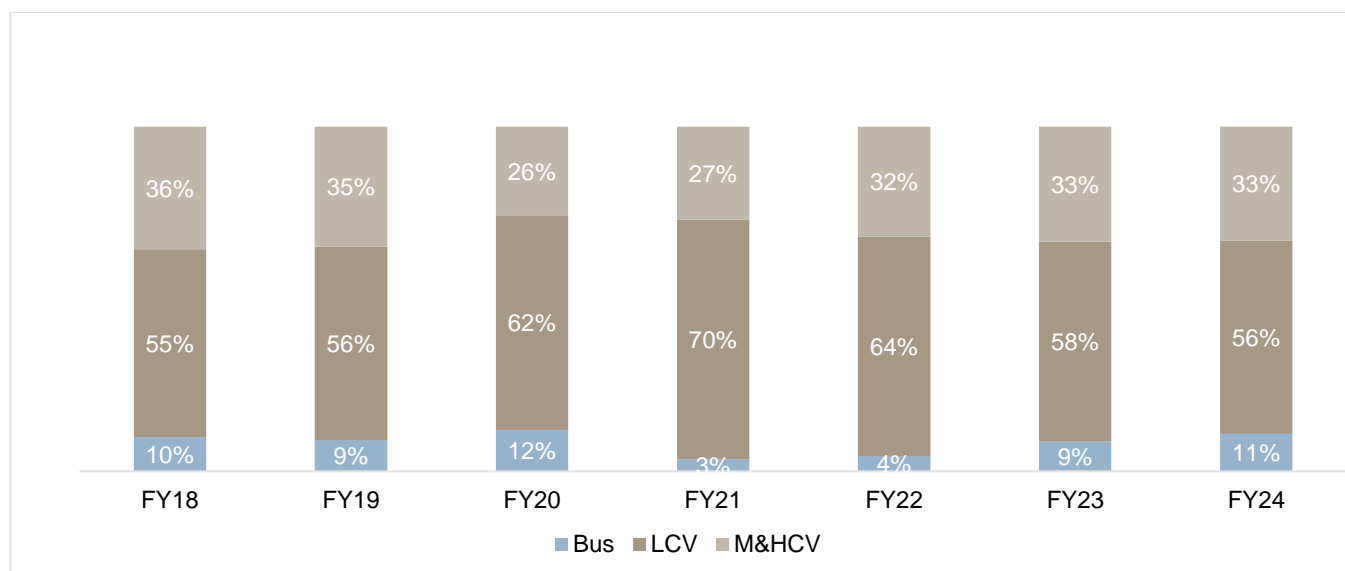
On the other hand, the continued demand for LCVs for e commerce and last mile delivery restricted its fall to 5% and thus extending its share to 69% during fiscal 2021. Moreover, LCVs are typically replaced every 6-8 years, and vehicles purchased between 2011 and 2013 were due for replacement in 2019. Given its strong sales in fiscal years 2011 and 2013, the sub-one-ton segment witnessed particularly strong replacement demand. This strategic replacement cycle contributed to stable sales in fiscal year 2019 and avoided a significant drop in LCV sales in fiscal year 2020 following robust sales in fiscal years 2018 and 2019. Even during the pandemic, a lesser impact of the pandemic on rural areas and improved rural sentiment resulted in LCVs outperforming M&HCVs.

Segment-wise share in domestic sales



Source: SIAM, CRISIL MI&A

Segment-wise share in domestic sales (%)



Source: SIAM, CRISIL MI&A

The commercial vehicle (CV) sales for fiscal year 2024 witnessed a growth of 1%. This trajectory is underpinned by increased government spending and replacement demand. In FY2023, the CV industry exhibited remarkable recovery with a growth rate of 34%, reaching 96% of pre-pandemic levels.

The Light Commercial Vehicle (LCV) witnessed a decrease of (3)% in fiscal year 2024, after an all-time high in sales in the previous fiscal. The lower utilization of vehicles coupled with the increase in asset costs lead to a decline in sales. The Medium and Heavy Commercial Vehicle (MHCV) segment witnessed a stable outlook in the fiscal year 2024. In the fiscal year 2024, the bus sales sector witnessed substantial growth to 27%. This growth is anticipated to be bolstered by robust replacement demand; wherein older buses will be replaced with newer ones. In fiscal 2025, we expect CV sales to grow at a moderate rate of (2)-2% due to the impact of the upcoming union elections and the cyclical nature of the industry.

The demand from the key end-user segments coupled with the pent-up replacement demand helped the industry to mark the growth. The CV industry exhibited a strong recovery in the fiscal year 2023, achieving a remarkable growth rate of 34%, albeit on a low base, and reaching 96% of the pre-pandemic levels observed in the fiscal year 2019. This resurgence can be attributed to pent-up replacement demand, improved transporter profitability, and pick-up in capex that had been hampered during the preceding 2-3 years due to economic stagnation and the disruptive impact of the pandemic.

In the first half of fiscal 2024 the CNG prices dropped by ~4% and the diesel prices by ~3% respectively on-year. In the LCV segment and the MHCV segment, the proportion of CNG vehicles decreased marginally by 1%. The CNG model availability was one of the major factors that lead to the drop as there were supply side constraints caused by OEMs transitioning to BS VI stage II emission standards leading to the unavailability of the LCV CNG models.

The adoption of Compressed Natural Gas (CNG) in the Light Commercial Vehicle (LCV) segment faced challenges in fiscal year 2023 due to a significant 57% increase in CNG prices relative to a minor 2% rise in diesel prices. As a result, the gap between CNG and diesel prices narrowed, leading to a reduction in the Total Cost of Ownership (TCO) benefits of CNG models. Consequently, the LCV segment observed a marginal decline in the share of CNG vehicles, indicating possible shifts in consumer preferences.

In fiscal 2024, the CNG penetration in LCV was 11% and in the Intermediate Medium and Heavy Goods Vehicle Category (IMHGV) increased to 11%. In FY 2023, the share of CNG models in the LCV market dropped from 15% in the previous fiscal year to 12%. Similarly, in the Intermediate Medium and Heavy Goods Vehicle (IMHGV) category, the share of CNG MHGV vehicles sold reduced from 11% in fiscal year 2022 to approximately 5% of total sales in FY 2023. The increased cost of CNG compared to diesel impacted demand, prompting consumers to opt for diesel-powered vehicles instead.

Despite these challenges, the long-term prospects for CNG adoption remain promising. Fluctuating fuel prices and potential government incentives for eco-friendly alternatives could potentially reignite demand for CNG-powered vehicles. Moreover, advancements in CNG technology and the expansion of refueling infrastructure may enhance the appeal of CNG models, offering a greener and more sustainable solution for the transportation sector.

In fiscal 2024, domestic CV industry is dominated by the LCV goods segment contributing to more than half of the vehicle sales. The larger M&HCV segment which includes ICV, MCV, MAV Haulage, Tractor trailers and Tippers contributes to 33%. The rest is contributed by buses in the CV segment accounting for 9%.

From this low base, industry witnessed a strong bounce back during fiscal 2021-2024 period. LCV sales witnessed a 19% CAGR rebounding to 99% of pre-COVID heights. The postponement of replacement volumes since fiscal year 2020 has further supported LCV demand volumes in fiscal year 2024.

In fiscal year 2023, the MHCV segment exhibited significant growth, expanding at a rate of 40%, although this was compared against a low base in fiscal year 2022. This recovery brought MHCV sales to approximately 92% of the level recorded in fiscal year 2019, a notable milestone. The resurgence in economic activities across various sectors played a pivotal role in driving this recovery.

In fiscal year 2023, the bus sales sector witnessed an extraordinary growth rate of 160% and in fiscal 2024, it witnessed a growth of 27%. However, it is essential to contextualize this growth as it was achieved on a low base, indicating a significant decline in bus sales during the previous fiscal year (fiscal 2022). The sharp growth in fiscal 2024 was primarily propelled by the resumption of schools and offices, along with a robust recovery in the tourism sector, contributing to a strong rebound in bus sales.

While bus sales more than doubled every fiscal off a very low base fuelled by robust replacement demand and urbanization trends. There has been unprecedented demand for buses. Buses are sold primarily to schools, corporates which use it to ferry staff and for tours & travel companies who use it for intercity and interstate travel. School demand has picked up after the pandemic. Schools have been apprehensive these last few years due to Covid and lockdowns however now there seems to be no fears in this regard and schools are preponing purchases, there seems to be a lot of pent-up demand from schools. Corporates have also started to operate in full swing work from office mode with a few IT giants making work from office mandatory this has led to considerable demand for staff service buses as well.

Demand Drivers

Increasing freight rates to aid in materialization of deferred demand

In fiscal year 2024, fuel prices constituted approximately 55% of transporter costs, exerting a considerable influence on their overall profitability. During this period, diesel prices experienced a modest increase of around 2%. Concurrently, freight rates also rose by an estimated 6%, signalling improved transporter profitability and heightened demand for freight services. These favourable factors are expected to boost Commercial Vehicle (CV) sales, as the industry capitalizes on the increased demand in the transportation sector.

Shift in fuel types of CVs to CNG

The adoption of Compressed Natural Gas (CNG) in the Light Commercial Vehicle (LCV) segment faced challenges in fiscal year 2024 due to a significant 57% increase in CNG prices relative to a minor 2% rise in diesel prices. As a result, the gap between CNG and diesel prices narrowed, leading to a reduction in the Total Cost of Ownership (TCO) benefits of CNG models. Consequently, the LCV segment observed a marginal decline in the share of CNG vehicles, indicating possible shifts in consumer preferences.

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In fiscal 2023, with the Kirit Parikh committee recommendations on CNG pricing, CNG prices have declined by 4% to Rs 74/kg. This decline in prices will open up the difference in total cost of ownership between Diesel and CNG favouring CNG transition.

In the first half of fiscal 2024 the CNG prices dropped by ~4% and the diesel prices by ~3% respectively on-year. In the LCV segment and the MHCV segment, the proportion of CNG vehicles decreased marginally by 1%. The CNG model availability was one of the major factors that lead to the drop as there were supply side constraints caused by OEMs transitioning to BS VI stage II emission standards leading to the unavailability of the LCV CNG models.

Despite these challenges, the long-term prospects for CNG adoption remain promising. Fluctuating fuel prices and potential government incentives for eco-friendly alternatives could potentially reignite demand for CNG-powered vehicles. Moreover, advancements in CNG technology and the expansion of refuelling infrastructure may enhance the appeal of CNG models, offering a greener and more sustainable solution for the transportation sector.

Stable agricultural output

Over fiscal 2024 to 2028, CRISIL projects 3-4% gross value added (GVA) growth in agriculture. In fiscal 2023, Agri GVA grew at 4% over last year and expected to remain steady in coming years.

In the current fiscal, kharif sowing was initially delayed due to the delayed monsoon. However, sowing has picked up in recent months. Moreover, higher MSP allocation for fiscal 2024 and good prices in mandis have maintained the positivity on-ground. Going ahead, the rainfall progress and spread to play a key role for the current kharif cycle. The progress of the monsoon and its impact on rural demand especially for two wheelers and tractors, remain as key monitorable.

Healthy industrial growth

The Indian industry's GVA grew at a tepid pace of 3.7% between fiscals 2018-2023. After ~5% growth in fiscal 2019, industrial GVA witnessed contraction in the next two years amidst the unfavourable macroeconomic scenario and the Covid pandemic.

From the low base of fiscal 2021, industrial GVA bounced back rapidly in fiscal 2022 and grew at ~11.5%. Gradual improvement continued in fiscal 2023 at 4.4%. Over the next five-year period (fiscal 2023-2028), industry GVA is expected to be robust driven by the government's focus on 'Make in India'. Moreover, improvement in infrastructure and higher expected corporate expenditure is likely to support the capex cycle going forward post fiscal 2023.

Gati Shakti

Consulting

PM GatiShakti National Master Plan (PMGS-NMP) was launched on 13th October 2021 for providing multimodal connectivity infrastructure to various economic zones. Cabinet Committee on Economic Affairs (CCEA) accorded approval for the implementation of PM GatiShakti National Master Plan on 21st October 2021. Essentially a digital platform to bring 16 Ministries including Railways and Roadways together for integrated planning and coordinated implementation of infrastructure connectivity projects. The multi-modal connectivity will provide integrated and seamless connectivity for movement of people, goods and services from one mode of transport to another. It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people.

PM Gati Shakti will incorporate the infrastructure schemes of various Ministries and State Governments like Bharatmala, Sagarmala, inland waterways, dry/land ports, UDAN etc. Economic Zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, agri zones will be covered to improve connectivity & make Indian businesses more competitive. It will also leverage technology extensively including spatial planning tools with ISRO (Indian Space Research Organisation) imagery developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

Focus on infrastructure and higher mining production to bolster tipper demand

The budgeted capex allocation for infrastructure ministries for fiscal 2024 has shown a 28% increase over fiscal 2023 RE (revised estimates) to Rs. 18.6 lakh crore. Execution by the National Highways Authority of India (NHAI) will reach up to ~14-15 km/day in fiscal 2027, as against ~11 km/day in fiscal 2021, aided by the Bharatmala project. Projects such as Sagarmala and investments in various irrigation projects will further drive MHCV demand. We expect coal production to expand at ~4.5-5.5% CAGR between fiscals 2023 and 2028, while iron ore mining will also likely grow at ~3.5-4.5% CAGR during this period, aiding tipper demand.

Capacity utilization and profitability of transporters

Utilization of transporters depends on:

- Availability of freight - driven by growth in industrial and agricultural production and port traffic
- Regulations on vehicle age, weight, permit and tax norms
- Improvements in road infrastructure, which improve the turnaround time

A rise in utilization translates into better cash flow for transporters and, hence, augurs well for CV sales.

Factors influencing transporter profitability are:

- Freight rates and capacity utilization
- Bargaining power
- Fuel cost and fuel efficiency
- Capital cost
- Agency commission and wage cost
- Operating and maintenance costs, such as tyre prices and toll rates

The dynamics of the domestic freight transport industry (DFTS) play an important role in determining demand for CVs.

Replacement demand

LCVs are typically replaced every 6-8 years, and vehicles purchased between fiscal years 2011 and 2013 were due for replacement in fiscal year 2019. Replacement demand is expected to be particularly high for the sub-one-tonne segment, given its robust sales during fiscal years 2011 and 2013. This strategic replacement cycle contributed to stable sales in fiscal year 2019 and prevented a major decline in LCV sales in fiscal year 2020 after robust sales in

fiscal years 2018 and 2019. The postponement of replacement volumes since fiscal year 2020 has further supported LCV demand volumes in fiscal year 2023.

JNNURM – I (Jawaharlal Nehru National Urban Renewal Mission) buses, sold during the peak seasons of fiscals 2011 and 2012, are expected to be replaced once funds are released by the central and state governments for purchase. This replacement is expected to gain pace now, aiding long-term MCV bus growth. The government's mandate to replace private vehicles (such as vans) with school buses in some cities, is also expected to augur well.

Also, the centre's scrappage policy is likely to attract 6,00,000-6,50,000 MHCV vehicles for scrapping there by driving the replacement demand.

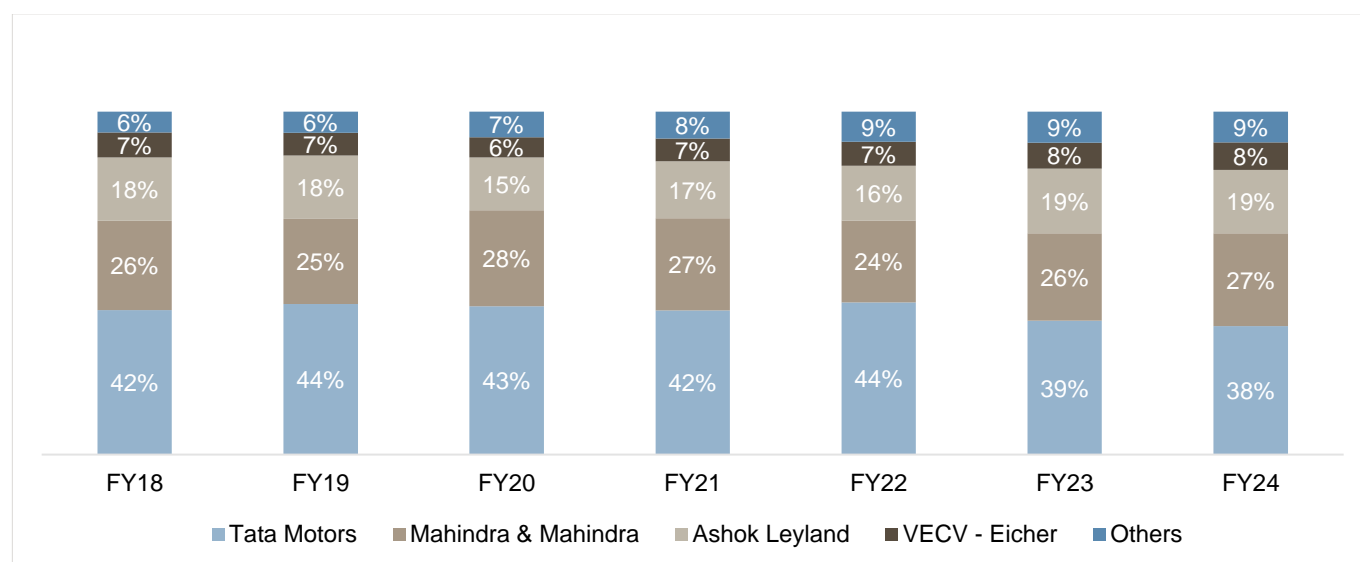
Scrappage policy

MoRTH, in August 2018, considered incentivizing the scrapping of vehicles sold before April 2005 (15 years old). After deliberations on the modalities on implementation of the norm, the government currently aims to promote vehicle scrapping by exempting registration charges for truck purchases made after scrapping older trucks. To incentivize scrappage of older vehicles, the government has increased the registration charges for older vehicles and increased stringency of fitness tests. These will entail higher costs for owners of older vehicles. Hence, by disincentivizing the ownership of older vehicles, the government expects the scrappage of older vehicles to increase. We expect the impact of the norms to be limited on additional scrappage (apart from vehicles scrapped in the normal course of business). If, through higher incentives from the government and OEMs, transporters can be incentivized to scrap vehicles older than 15 years, we expect 6,00,000-6,50,000 MHCVs to be available for scrapping.

Competitive Scenario

Tata Motors leads in the CVs segment in terms of market share, followed by Mahindra & Mahindra and Ashok Leyland (ALL). Over the years, from a high base, Tata Motors has lost some ground to Mahindra and VE Commercial Vehicles Ltd.

Overall CV industry split by market share across OEMs

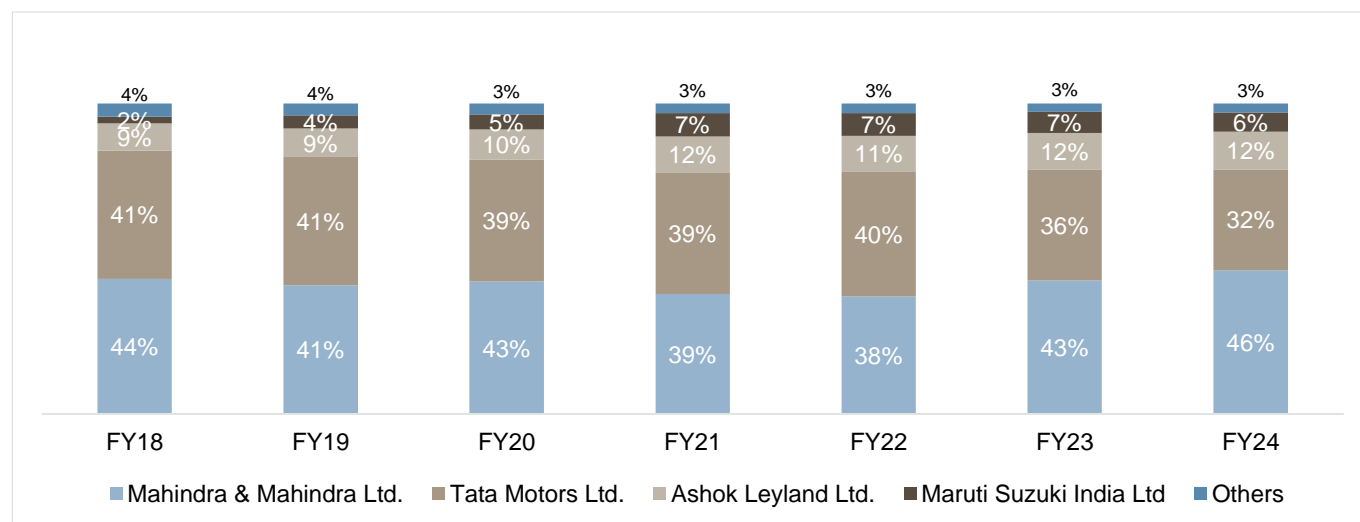


Note - Other players are Force Motors Ltd., Isuzu, JBM auto Ltd, Maruti Suzuki Ltd, Olectra Greentech Limited, Piaggio Vehicles Pvt. Ltd., SML Isuzu Ltd., Swaraj Mazda Ltd., Toyota Kirloskar Motor Pvt Ltd., VECVs – Volvo and Volvo Group India Pvt Ltd.

Source: SIAM, CRISIL MI&A

Mahindra lost some share during fiscal 2021 and fiscal 2022 amidst the supply constraints, semiconductor shortage faced by the company. However, in fiscal 2023, Mahindra regained some ground with some easement in supply as well as with the launch of new Bolero City Pik-Up, an addition to its existing Pik-Up range as well as Furio range boosting its share. Since the launch of Boss, Ashok Leyland has rapidly gained market share in the ICV segment. In FY24, there is some pressure seen in the sub-one category that is impacting Tata Motors' share, whose Tata Ace has been a dominant one in the same category. Also, Mahindra has been benefitted due to a potential trend shift happening from sub-one tonne to pik-up category where they have strong market hold.

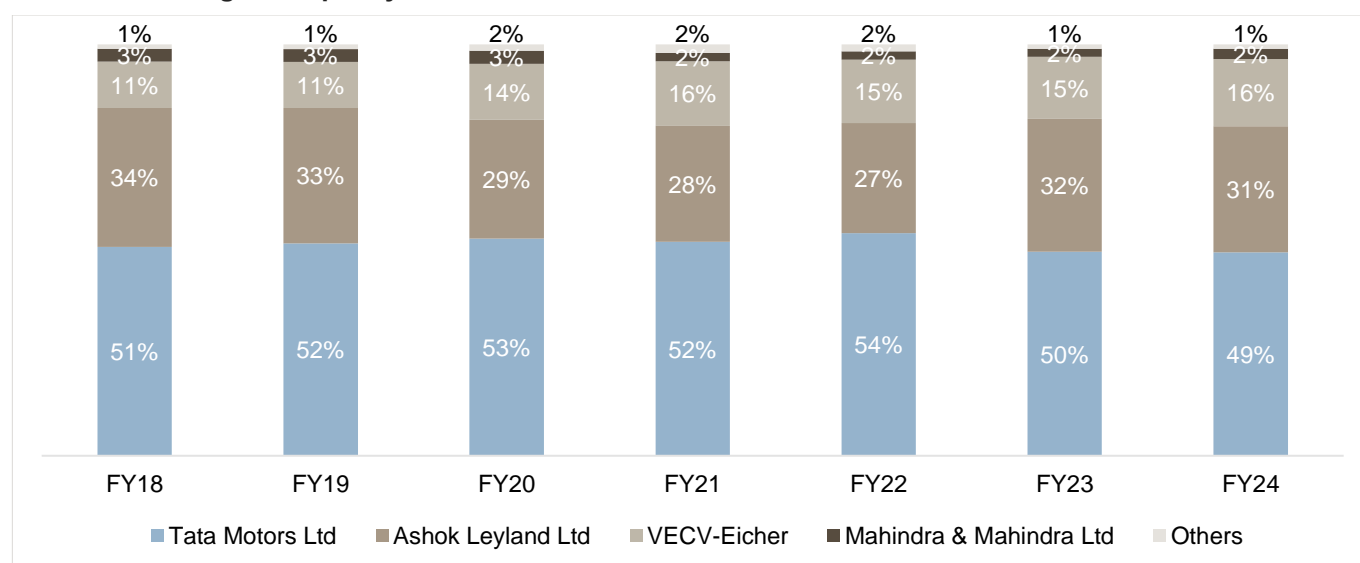
LCV Goods Segment split by market share across OEMs



Note: Others include VECVs Eicher, Swaraj Mazda Ltd, Tata Motors, Force Motors Ltd, Isuzu, Toyota Kirloskar Motor Pvt Ltd and Piaggio Vehicles Pvt Ltd

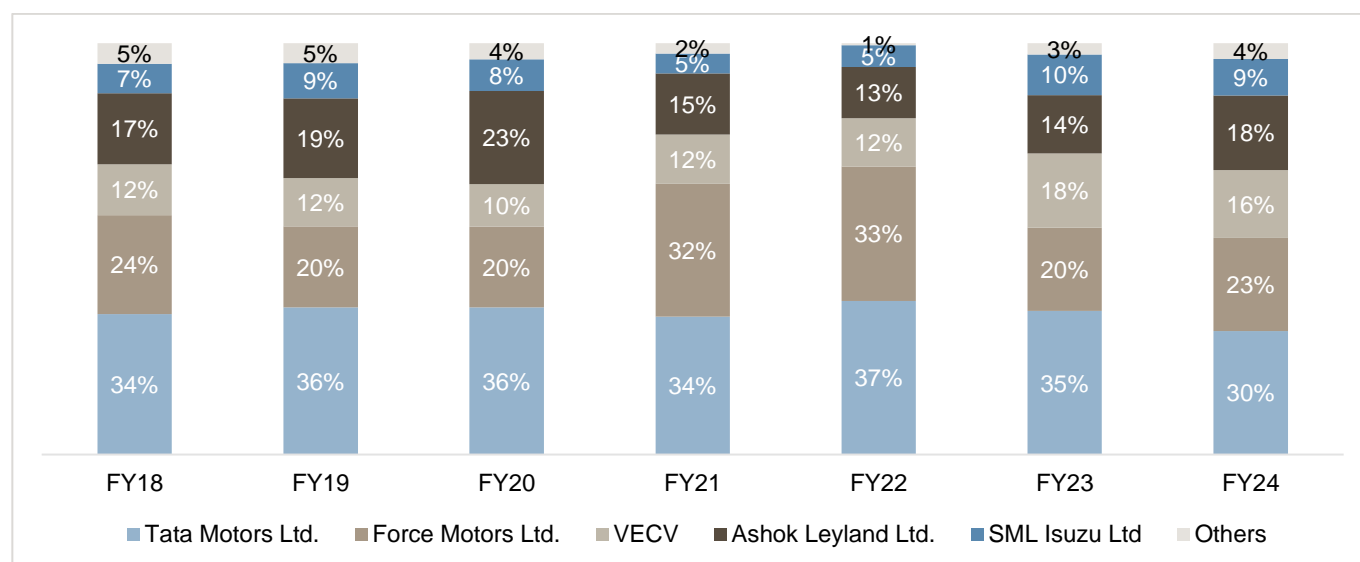
Source: SIAM, CRISIL MI&A

MHCV Goods segment split by market share across OEMs



Source: SIAM, CRISIL MI&A

Bus segment split by market share across OEMs



Source: SIAM, CRISIL MI&A

Emerging Trends in CV ecosystem

Alternate fuels

The adoption of alternate fuels in commercial vehicles has gained significant momentum in recent years, driven by the need for low emission transportation solutions to address environmental concerns, reduce dependency on fossil fuels and achieve zero emission transportation. Three prominent alternatives that have garnered attention are Electric Vehicles (EVs), natural gas, and hydrogen-powered vehicles.

EV adoption in the commercial vehicle segment is gradually picking up pace in the LCV and bus segment due to advancements in battery technology, declining battery costs, and favorable government policies. The government has been stepping up efforts in promoting electric mobility through FAME-II scheme. It has identified STU buses as a one of the key vehicle segments that should adopt electrification and availability of incentives are driving adoption of EV fleets by STU buses. These vehicles offer several advantages, including lower operating costs, reduced emissions, and quieter operation. However, challenges such as limited charging infrastructure and concerns over range and load capacity hamper the adoption of EVs in haulage and heavy vehicles segment.

Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) are being considered as cleaner alternatives to traditional diesel and petrol in commercial vehicles. CNG is particularly popular for buses, LCVs and ICVs. It produces fewer emissions of pollutants like particulate matter and nitrogen oxides compared to conventional fuels. With increasing gas network coverage across different Indian states due to city gas distribution (CGD) bidding rounds 9, 10, 11 and 11A, reach of gas pipelines would not be a problem, resulting in a swifter shift from diesel to CNG. Also, in FY2023 an incremental ~1,134 new stations were added respectively, taking the total number of CNG stations to 5,665 in March 2023. With a clear increase in the number of stations, the number of CNG vehicles launched by OEMs would see an increase. The advancements in CNG technology and the expansion of refueling infrastructure may enhance the appeal of CNG models, offering a greener and more sustainable solution for the transportation sector.

Hydrogen is also being explored as an alternate fuel for commercial vehicles through fuel cells and hydrogen ICE powertrains. Hydrogen-powered trucks and buses offer long ranges and faster refueling times compared to EVs. They emit only water vapor as a by-product, making them attractive from an emissions standpoint. However, challenges such as the high cost of production, transportation, and infrastructure development hinder widespread

adoption. Furthermore, MoRTH have framed draft rules for type approval of hydrogen ICE vehicles under M and N category and MNRE have introduced National Green Hydrogen mission to incentivize the commercial production of green hydrogen and make India a net exporter of the fuel. However, these initiatives are yet to see a fruitful outcome since this technology is still in its early stages.

Truck Aggregation

The truck aggregation trend has witnessed significant growth over the past few years. This model involves online platforms that connect truck owners and transporters with businesses requiring freight services. It has transformed the traditional trucking industry by enhancing efficiency, reducing empty miles, and providing better load utilization. Truck aggregation platforms like BlackBuck, Rivigo, and TruckSuvidha have gained prominence, streamlining logistics through digital solutions. These platforms offer benefits such as real-time tracking, transparent pricing, and improved fleet management. Government initiatives like GST implementation, Logistic Efficient Enhancement Program (LEEP) and improved road infrastructure have further bolstered the growth of truck aggregation.

Telematics and connectivity

Telematics involves the integration of telecommunications and informatics to enable real-time communication and data exchange between vehicles, fleet managers, and centralized systems. While connectivity enhances fleet management, and operational efficiency. Commercial vehicles are equipped with GPS, sensors, and communication devices, enabling fleet operators to monitor real time parameters like location, fuel consumption, speed, and driver behavior. This data-driven approach optimizes routes, reduces idle time, and enhances fuel efficiency, resulting in cost savings and reduced carbon emissions. Connectivity solutions also improve vehicle maintenance as real-time diagnostics allow predictive maintenance by minimizing breakdowns and downtime. Also, monitoring of driving behavior promotes responsible practices, minimizing rash driving and emergency alerts for assistance in case of accidents. Government regulations, such as AIS-140 norms mandating vehicle tracking systems, further catalyze the adoption of telematics. Established players like Tata, Ashok Leyland and startups in India offer customizable solutions, fostering healthy competition and technological advancements.

Commissioning of dedicated freight corridors (DFCs) to put brakes on road freight and hence CV sales

The DFCs are expected to help the Indian Railways regain its lost freight share, by reducing turnaround times between the importing and consuming destinations. Not only will the DFC induce faster freight movement, but it will also allow for faster evacuation of cargo from the ports, thereby improving efficiency. In fact, the DFCs and the associated logistics parks are likely to help industries significantly reduce their plant-level inventory as well, enabling savings in working capital. Moreover, the shifting of freight to rail will aid the economy by decongesting major highways.

Thus, the roads segment, which has outperformed rail over the past decade, will lose some share once the DFCs are commissioned.

6.2. Outlook of Indian commercial vehicle industry

The CV industry recovered spectacularly in fiscal 2023, with a 34% growth rate and 0.6% in fiscal 2024, reaching 96% of pre-pandemic levels of fiscal 2019. Increased government spending, robust replacement demand, and strong end-user sectors such as construction and mining are expected to support growth.

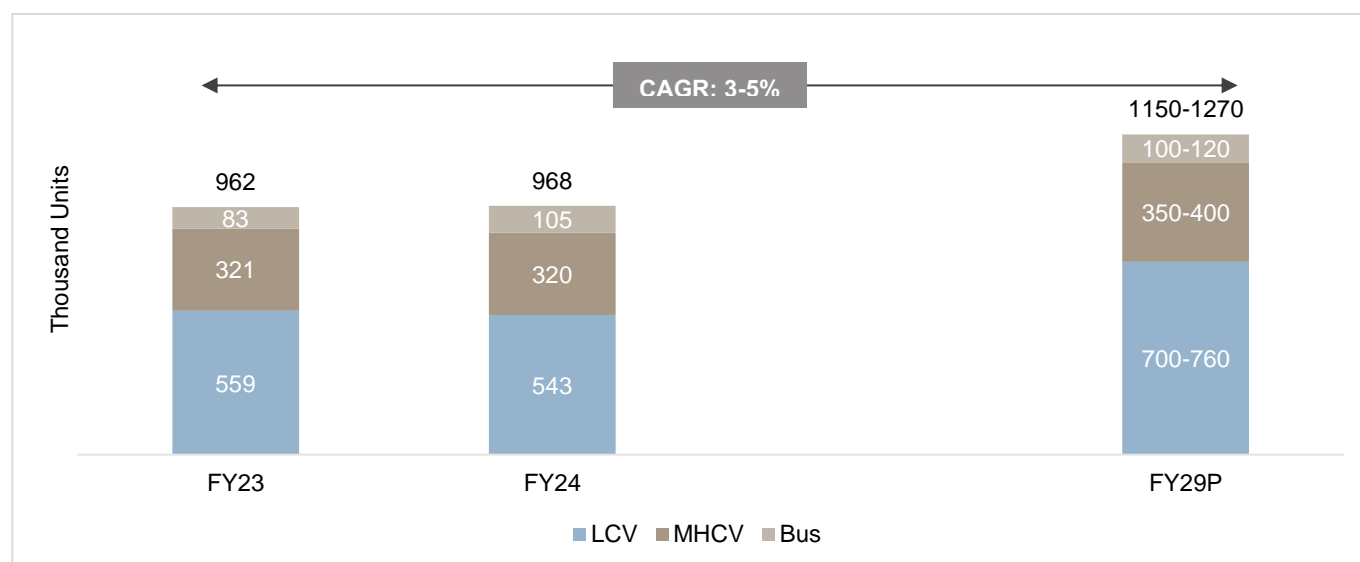
Light commercial vehicle goods (LCV) sales declined by -3% in fiscal 2024, supported by sustained replacement demand with rising competition from electric three-wheelers, especially in the sub one tonne segment restricting further expansion. In fiscal 2023, LCV sales recorded impressive growth of 23%, rebounding to 99% of pre-

pandemic levels. The surge in sales can be attributed to robust replacement demand, especially in the sub-one-tonne category, which was deferred due to economic challenges and the pandemic. However, LCV sales declined 9% in the first quarter of fiscal 2024 due to supply side constraints on account of OEMs transitioning to BS VI stage II emission standards. Despite this setback, the industry anticipates a revival in sales in the upcoming quarters, driven by a good monsoon season and an improved economic outlook with the easing of supply constraints.

Bus sales witnessed an increase of 26.8% in fiscal 2024, owing to strong replacement demand and urbanisation trends. CNG adoption has been hampered, affecting LCV sales. The CV industry, led by MHCVs, is expected to grow steadily over the next five years.

Over the long-term horizon, domestic CV sales are projected to record a 3-5% CAGR between fiscals 2024 and 2029, led by a 5-7% CAGR in the LCV segment, 2-4% CAGR in the M&HCV segment and 1-3% CAGR in the bus segment.

Commercial vehicle domestic sales outlook



P: Projected; E: Estimated,
Source: SIAM, CRISIL MI&A

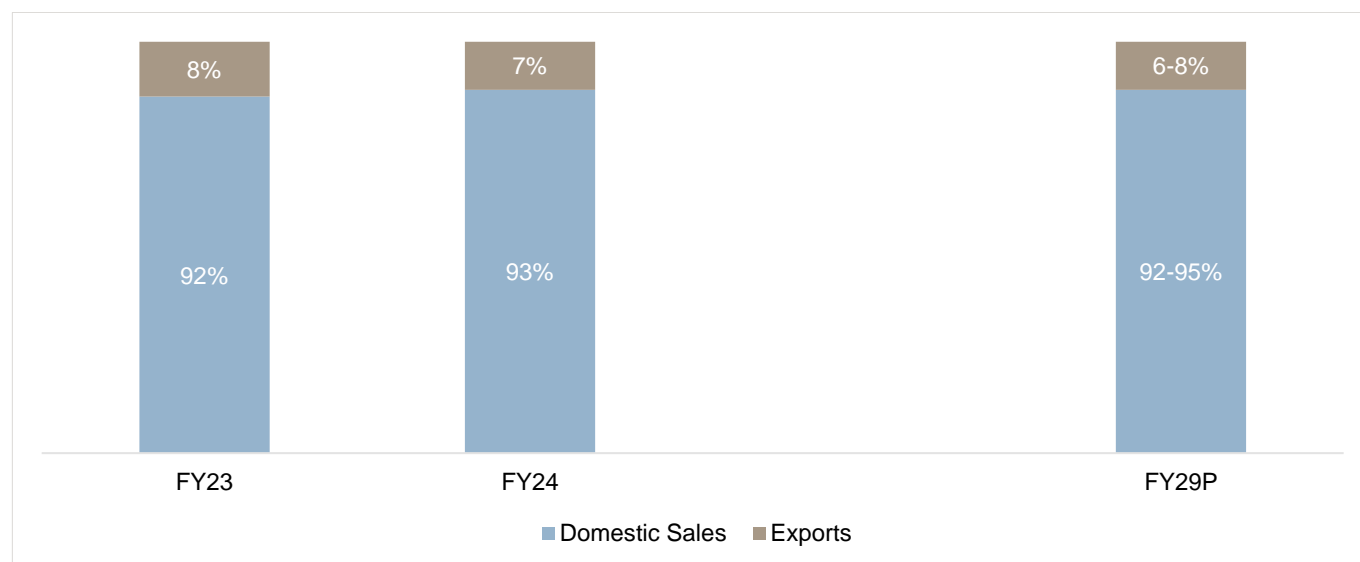
Split by domestic sales and exports

The Indian CV industry is expected to remain domestic-focused, with domestic sales comprising ~93% share of production even in fiscal 2029. However, with exports projected to grow at 5-7% CAGR between the fiscal periods 2024 to 2029, their contribution to overall production is likely to remain flat.

The second Covid-19 wave resulting in lockdowns in key affected areas in the first quarter of fiscal 2022 impacted domestic sales across segments, posting a healthy fourth quarter in fiscal 2021. Consequently, LCV and MHCV volumes declined ~42% and ~63% sequentially (on-quarter) and overall CV volumes by ~50%. Also, with a significant share of loans under moratorium amid low fleet utilization and freight rates, risk-averse financiers limited wholesale offtake. In FY22, LCV and MHCV sales improved by ~17% and 50% and on-year respectively over a low base of FY21. As mobility restrictions were relaxed and economic activities started picking up after the second wave abated in Q1 FY22, CV sales have picked up. This resurgence can be attributed to pent-up replacement demand that had been hampered during the preceding 2-3 years due to economic stagnation and the disruptive impact of the pandemic.

On the exports front, manufacturers are directing their investments into expanding presence to other Asian countries from neighbouring countries such as Bangladesh, Nepal, and Sri Lanka to Africa and the Middle East. Domestic players are also considering setting up assembly operations across multiple markets. Also, going forward, new product line-ups and technology upgradation will allow domestic players to enter relatively advanced markets of south-east Asia. The economic slowdown is anticipated to lead to reduced consumer spending and investment in various regions, subsequently impacting merchandise trade volumes and posing significant challenges for India's export prospects.

CV industry split into domestic sales and exports



Note: P - Projected

Source: SIAM, CRISIL MI&A

CRISIL MI&A expects sales of commercial vehicles to grow at a CAGR of 3-5% between fiscals 2024 and 2029 aided by healthy industrial growth, focus on infrastructure and higher mining production. CV sales has plummeted ~29% in fiscal 2020 and further by ~21% in fiscal 2021. The fall in sales had created a low base over which volumes have witnessed growth of ~26% in fiscal 2022. In the last three years (FY2020-FY2023), the industry demonstrated a strong CAGR of 10%. The rise in tonnage addition is expected to be driven by an improved product mix, with a notable surge in demand for Multi-Axle Vehicles (MAV) and T-Trailer despite a shift to lower tonnage vehicles due to axle norm regulations.

End-use sector outlook (between fiscals 2024 and 2028P)

Key end-use segments and outlook		
Coal	5-6%	Growth in coal-based power generation Demand from allied sectors such as cement and sponge iron
Steel	6-7%	Building and construction, the major demand creator in this segment Demand to be driven by rural housing / affordable housing and commercialization of Tier III/IV cities.
Cement	5-6%	Infrastructure demand also plays an important factor according to National Infrastructure Pipeline (NIP)
Port movement	2-5%	Iron ore exports to support growth, as global demand for steel improves. POL trade (imports) particularly in LPG poised to go up

Road investment	8-12%	NIP to drive infrastructure investments on roads and highways. CRISIL MI&A expects the Govt. of India (GoI) to be able to achieve 80-85% of its targeted investments
E-commerce	20-25%	Food, fashion and grocery segments grow at a faster rate as penetration improves. E-retailers to focus on expansion in Tier I/II cities over this period

Source: CRISIL MI&A

Medium & Heavy Commercial Vehicles Set to Thrive in the Coming Five Years

The MHCV industry is expected to grow significantly, with a compound annual growth rate (CAGR) of approximately 2-4% projected from fiscal year 2024 to fiscal year 2029.

Long-term MHCV sales are likely to be driven by several factors, including the country's improving industrial activity, consistent agricultural output, and the government's continued emphasis on infrastructure development. However, volume growth may be limited due to efficiencies gained from the implementation of the Goods and Services Tax (GST), the development of improved road infrastructure, and the commissioning of the dedicated goods corridor (DFC). Nonetheless, the industry remains on a promising growth trajectory in the coming years.

Over the next five years (fiscal 2024-2029), industry GVA is expected to be robust, driven by the government's emphasis on "Make in India." Furthermore, infrastructure improvements and higher-than-expected corporate spending are expected to support the capex cycle after fiscal 2024.

LCV sales to grow at a modest pace in the long run.

Light commercial vehicle (LCV) demand is expected to grow at a 5-7% CAGR from fiscal 2024 to fiscal 2029, owing to increased private consumption, lower penetration, increased availability of redistribution goods, and improved financing. The industry grew at a 4% CAGR between fiscal 2018 and 2024.

Upper-end light commercial vehicles (ULCVs) provide lower returns to the transporter than ICVs and are best suited for captive use. Entry restrictions on ICV trucks and higher tonnage MHCVs are expected to keep demand from this segment buoyant. However, the higher toll on ULCV trucks versus pickups will limit segment growth.

SCV segment now offers a diverse range of products in various tonnages that cater to the needs of all types of customers. To fill tonnage gaps, players have launched a slew of new products, particularly in the last five years. In addition, the availability of CNG options is expected to keep volumes in this segment stable.

Bus demand is to witness strong growth over the next five years.

Domestic bus sales are expected to grow at a CAGR of 1-3% between fiscal years 2024 and 2029. Increased demand for inter-city/state travel, aided by improved road infrastructure, and higher personal disposable incomes will drive growth. The unregulated segment, which primarily serves demand from schools, businesses, and intercity travel by private operators, will continue to be the largest end-user. However, the implementation of metro-rail and monorail in several cities would have an impact on future bus sales growth. In terms of penetration (buses per 1,000 people), India ranks last among the countries studied, with 1 bus per 1,000 people and a 35% urbanization rate. These calls may have an upside if the scrappage policy is enforced, as well as increased urbanization and replacement of JNURM buses purchased between FY10 and FY13.

7. Indian tractor industry review and outlook

7.1. Review of Indian tractor industry

Historic domestic tractor industry

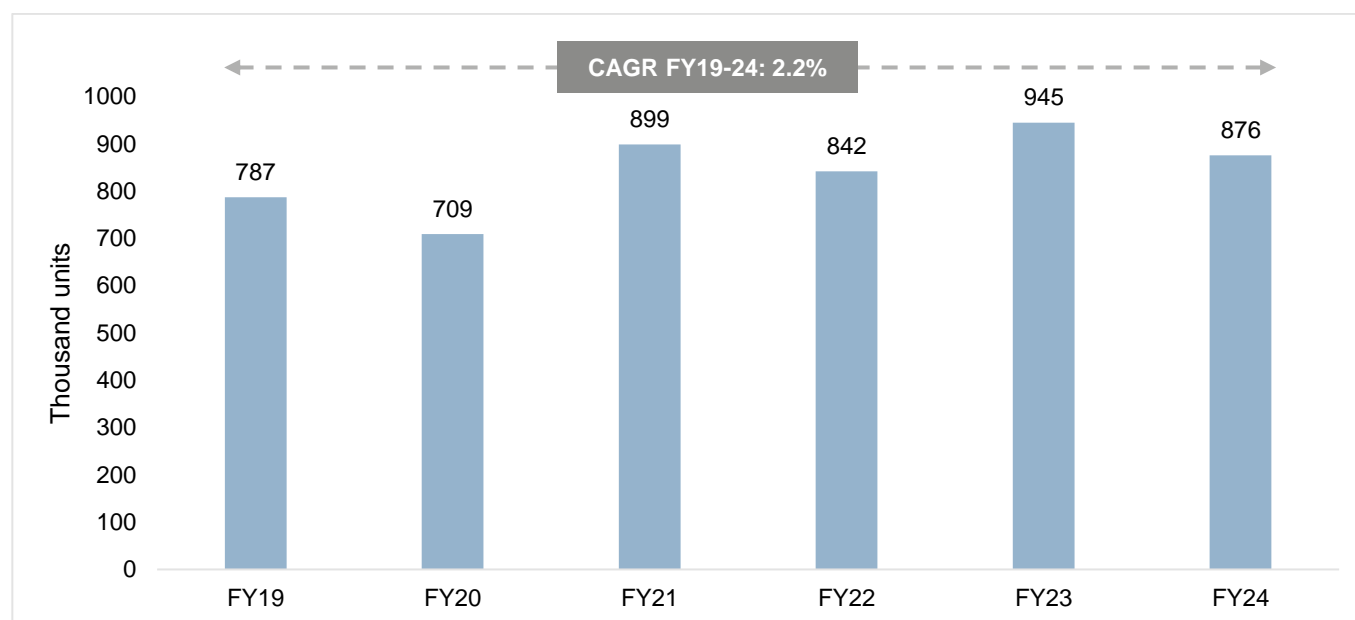
In fiscal 2022, domestic tractor demand dropped 6.4% on-year after growing 26.6% in fiscal 2021. Price hikes by OEMs, higher inventory at dealerships, lower commercial demand, negative farmer sentiment owing to rising cost of cultivation, low fertiliser availability and increase in other expenditure (such as marriages and other social occasions) hampered the demand.

In fiscal 2023, tractor sales grew 12.2% on-year to an all-time high of ~945,000 units. Healthy crop prices, sound reservoir levels owing to above-normal monsoon, higher MSPs announced by the government and better rabi acreage, all led to positive farmer sentiment. Healthy festival demand because of various schemes and discounts supported the retail growth momentum. Commercial demand during the fiscal, however, remained rangebound in fiscal 2023 owing to slower retail momentum in eastern states and a complete ban on sandmining. In the last fiscals, the governments in states such as Bihar, Jharkhand and Uttar Pradesh had clamped down on illegal sand mining, negatively impacting commercial demand for tractors.

Last fiscal, domestic tractor sales dropped by 7.4% on-year to ~875,724 units, on account of lower reservoir levels and negative farmer sentiments. Negative farmer sentiments also impacted the festive demand, with sales in the festive months September, October, and November for fiscal 2024 - being lower by 6% on-year as compared to the same period last fiscal. Uneven rainfall distribution with monsoon being 6% below normal for the season has led to slower pick-up in the retail market. Barring north-west and central India, remaining regions reported deficit rainfall over normal impacting tractor demand. Reservoir level for the country as of 2nd May 2024, remained at 28% capacity as a percentage of live capacity. Erratic monsoon, lower reservoir levels, anticipated decline in rabi acreage contributed towards a 7.4% on-year decline in tractor sales for fiscal 2024.

A large part of domestic tractor sales is driven by replacement demand. The typical holding period for a tractor is 6-9 years. Most of the tractors in the country is replaced within 7-8 years. Of the domestic demand, 50-60% constitute replacement demand. In states with high penetration of tractors, such as Punjab and Haryana, the replacement demand accounts for 70-80% of total sales. On the other hand, states with lower farmer incomes than that in Punjab and Haryana have a lengthier replacement cycle (higher age tractors) vs industry average.

Domestic tractor industry logged 2.2% CAGR between fiscals 2019 and 2024



Source: TMA, CRISIL MI&A Consulting

Factors impacting tractor industry

Improving crop prices and pick-up in infrastructure development to drive domestic tractor demand

Parameters	Impact			
	FY21	FY22	FY23	FY24E
Farm income	F	N	F	N
Crop prices (minimum support prices or MSPs)	F	N	F	F
Crop output	F	N	F	N
Kharif output	F	N	F	N
Rabi output	F	N	F	N
Demand indicators	NF	N	N	N
Infrastructure development	NF	N	F	F
Sand mining	N	N	N	N
Finance	N	N	N	F
Agri credit, finance availability	N	N	N	F
Supply	F	NF	NF	N
Channel inventory	F	NF	NF	N
Player action: Pricing and products	F	F	N	N

Note: F - Favourable, NF - Not Favourable, N - Neutral

Source: CRISIL MI&A CONSULTING

Irrigation intensity and monsoons

Irrigation plays a vital role in determining the demand for tractors. The irrigation spend, which increased significantly in the last two decades, have aided both irrigation and cropping intensity, thus leading to higher and stable farm incomes. Irrigation intensity is expected to improve further over the medium term, thus supporting tractor sales. Punjab and Haryana have the highest irrigation intensity and also account for the highest tractor penetration in India. Thus, as irrigation facilities improve in other parts of India, tractor penetration will see a corresponding increase. However, extremely fragmented landholdings in certain states may deter them from reaching higher tractor penetration. Besides, deficient monsoons also impact reservoir levels and, in turn, irrigation.

Landholding pattern

The average landholding size in India is very low at 1.16 hectares (ha) as against the world average of 3.7 ha, with about 68% of the farmers being marginal farmers (holding less than 1 ha). This has been a negative factor for tractor sales. Moreover, the average landholding size has been declining due to socio-economic factors such as the break-up of joint families and division of ancestral land. This has both positive and negative impacts on tractor demand. With the division of larger landholdings into smaller ones, the number of tractors required is expected to rise. However, the purchase of a tractor would become uneconomical for small farmers when the farm sizes are reduced (as a result of the sub-division of already small landholdings). But with the proportion of landholdings below 2 ha being very high, consolidation of landholdings will drive demand in the long run.

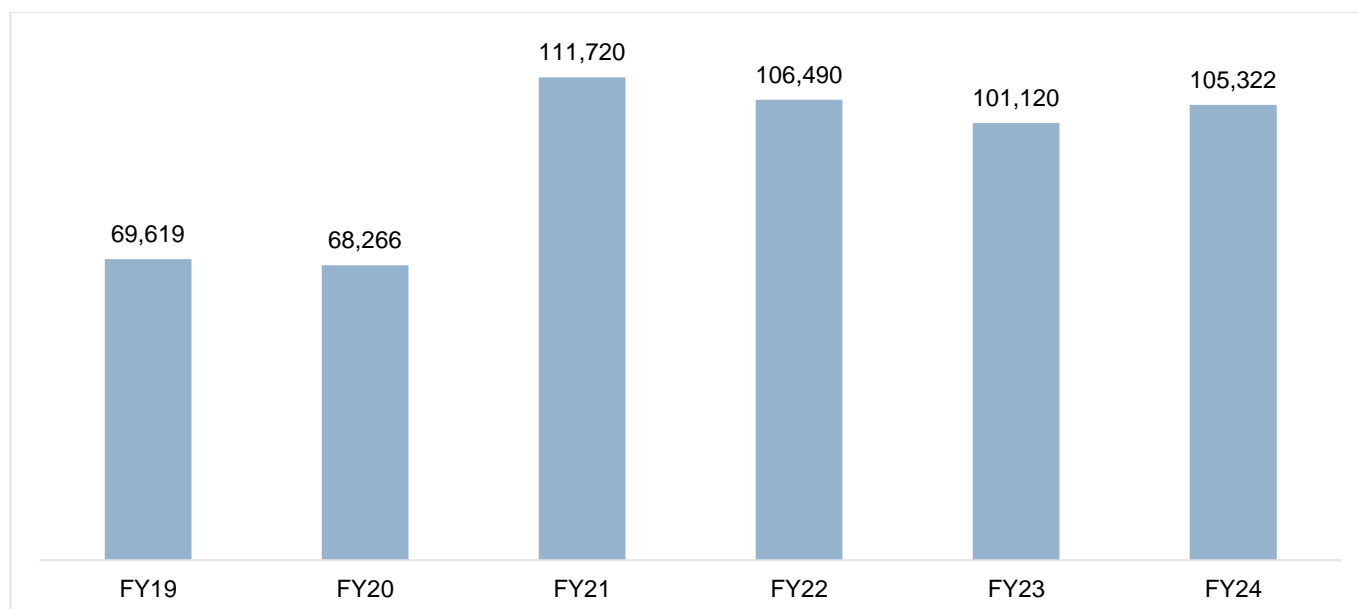
Availability of credit

In India, 70-75% of tractors purchased are on credit. So, finance availability becomes a key demand driver. Any major changes in financing norms directly impact the demand for tractors. Agricultural credit usage in farm mechanisation has been growing steadily over the years, thus enhancing farmers' ability to buy tractors. Public sector banks (PSBs) and non-banking financial companies (NBFCs) are major financiers. Over the last decade, the cumulative share of PSBs, co-operative banks and regional rural banks has come down from about 75% to 15-20%, with NBFCs now accounting for about 50-55% of the market.

MGNREGA spending

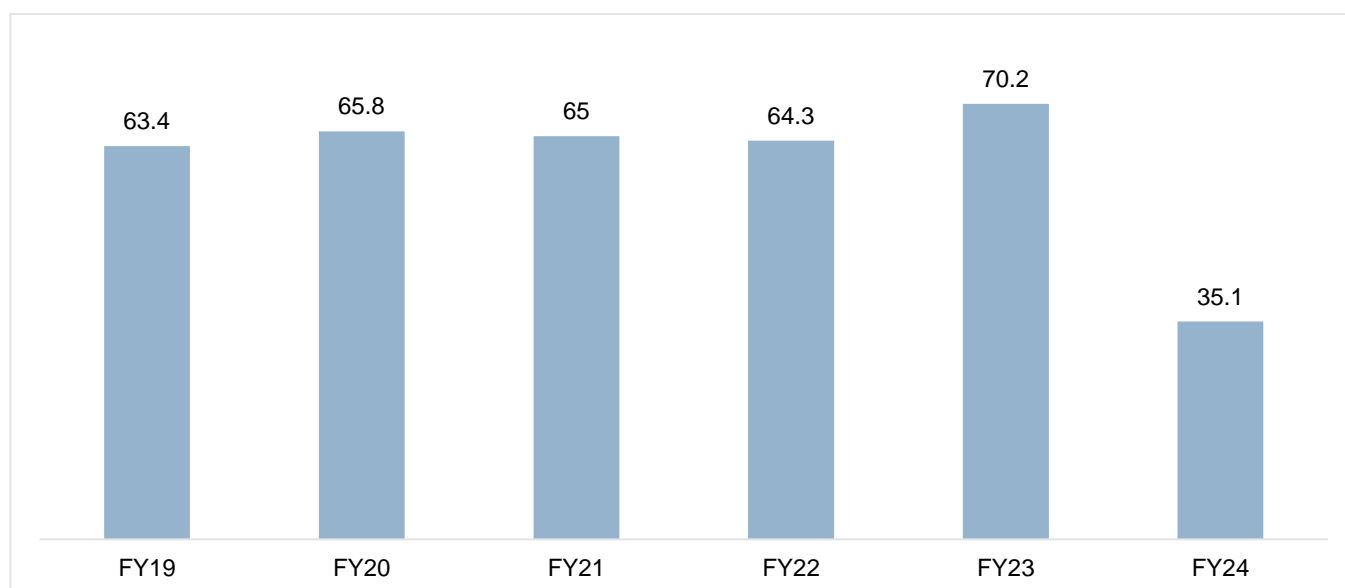
MGNREGA is an employment-generating and asset-creating scheme of the central government and make up a large portion of the expenditure budget of the Department of Rural Development. It is a social safety net scheme and is driven by demand. So, periods of rural stress or shocks result in higher-than-budgeted spending under this scheme. In fiscal 2024, the budget allocation for MGNREGA was Rs 86,000 crore. In fact, the actual spends under the scheme have on average been higher than the budgeted amount in the past.

MNREGA expenditure (in Rs crore)



Source: Ministry of Rural Development, CRISIL MI&A CONSULTING

MNREGA expenditure as a percent of total agriculture and agriculture allied works



Source: Ministry of Rural Development, CRISIL MI&A CONSULTING

MSPs of food grains

The government's price policy for major agricultural commodities seeks to ensure remunerative prices to the growers for their produce with a view to encouraging higher investment and production and safeguarding the interest of consumers by making available supplies at reasonable prices. Towards this end, the government announces MSPs for 22 mandated crops and fair and remunerative prices (FRP) for sugarcane based on the recommendations of the Commission for Agricultural Costs & Prices (CACP) and after considering the views of concerned State Governments and central ministries/ departments. The 22 crops are 14 kharif crops (paddy, jowar, bajra, maize, ragi, tur (arhar), moong, urad, groundnut, soybean (yellow), sunflower seed, sesamum, nigerseed and

cotton), six rabi crops (wheat, barley, gram, masur or lentil, rapeseed & mustard and safflower) and two commercial crops (jute and copra). In addition to that, MSP for toria is fixed on the basis of MSPs of rapeseed and mustard and that for de-husked coconut on the basis of that of copra. While recommending MSPs, CACP considers important factors, such as cost of production; the overall demand-supply situation of various crops in domestic and world markets; domestic and international prices; inter-crop price parity; terms of trade between agricultural and non-agricultural sectors; likely effect of price policy on rest of the economy; and a minimum of 50% as the margin over the cost of production.

- **MSP for paddy and maize (fiscals 2018-2023):** An analysis of the trend shows that there has been an exponential rise in MSPs for paddy and maize. The MSP for paddy, which was Rs 1,550 per quintal in fiscal 2018 increased to Rs 2,040 in fiscal 2023, logging a 5.6% CAGR. Meanwhile, MSP for maize increased from 1425 per quintal to Rs 1962, logging a 6.6% CAGR.
- **MSP for major oil seeds:** The MSP for groundnut logged a 5.6% CAGR from Rs 4,450 per quintal to Rs 5850 during the period. Similarly, sunflower seeds and soyabean witnessed a CAGR of 9.3% and 7.1%, respectively.
- **MSP for wheat (2017-18 to 2022-23):** The MSP for wheat was Rs 1,625 per quintal in fiscal 2018. This increased to Rs 2,015 in fiscal 2023 at a CAGR of 4.4%.

MSPs are the government-fixed procurement prices of food grains. These prices form a base for the calculation of market prices. Any change in MSPs directly affects farmers' income and, in turn, their loan repayment capability. MSPs have helped reduce the volatility in farm incomes, notwithstanding some fluctuation in agricultural production because of deviation in rainfall. In fiscal 2019, the average MSP hike was around 15-20% on-year. Coupled with, good crop output, it resulted in higher farm income across major regions. However, last fiscal, the MSP hike was only 4-6% on-year. Going forward, the government is unlikely to increase MSPs sharply because of its fiscal constraints and as part of its effort to control inflation, which is seen emerging as the central pillar of its economic policy.

Cropping pattern

State governments are encouraging and educating farmers to improve farm productivity to boost their incomes. To improve farm productivity, they are urged to take up multiple cropping. Farmers will find use of tractors extremely helpful in this context as they quicken the operations. Farmers will be able to move on to the next crop faster with the use of tractors.

Increase in cash crop production

Extensive cultivation of cash crops has yielded higher incomes for farmers and boosted tractor demand. Over the years, cultivation of cash crops has been rising in terms of the land area and the share of output.

Nature of soil

Smaller tractors are more suitable for soft soil conditions, as conducting agricultural operations in such conditions requires low-power tractors. In India, the northern states of Punjab and Haryana and the western parts of Uttar Pradesh have relatively soft soil. Hence, the demand for small tractors is high in these regions. In the southern and western regions, the soil is relatively hard, thus requiring medium and large-sized tractors.

Crop mix

The crop mix and the nature of crops cultivated have a significant role in determining the choice of a tractor. Medium and large tractors are preferred for the cultivation of cash crops such as sugarcane and cotton, which demand high intensity activities and for which timeliness of operations is significant. Similarly, high-power tractors are preferred in the case of intensive farming and multiple cropping, land bed preparation, harvesting and when transportation needs to be quick.

Replacement demand

The lifespan of a tractor is estimated at 18-20 years, though in actual it may vary depending on the soil and cropping conditions. Usually, farmers prefer replacing their old tractors with upgraded, high-power vehicle. Hence, given the increasing income levels replacement demand in states such as Punjab and Uttar Pradesh would be high for high-power tractors.

Purpose of use

The choice of a tractor depends on whether the customer is a farmer, who purchases for agricultural purposes, or a contractor, who would use it for commercial purposes such as in construction projects for the transportation of goods and materials. High-power tractors are preferred for construction purposes.

Resale price of tractors

A tractor is typically replaced after 6-8 years of use (though the lifespan is 18-20 years). Since farmers use the proceeds from the sale of old tractor to pay the margin money for the new one, the likely resale price is a key consideration while buying the new one.

PMGSY completion trend

The Pradhan Mantri Gram Sadak Yojana (PMGSY) is a one-time special intervention to provide rural connectivity, by constructing a single all-weather road, to the eligible unconnected habitations in the core network with a population of 500 persons and above (Census 2001) in plain areas. The phase 1 of the scheme was launched in 2000. Under the scheme, the Centre had recognised 178,184 habitations, of which 97% of the eligible and feasible habitations were connected as of November 2019.

Further, the government launched a new intervention in the scheme, namely PMGSY-II, in fiscal 2014 aiming to consolidate 50,000 km of existing rural road network to improve its overall efficiency as a provider of transportation services for people, goods and services. As of date, 41,434 km of rural roads have been sanctioned under PMGSY-II, of which 75% have been completed. The umbrella scheme involves construction/ upgradation of over 800,000 km of rural roads. Under PMGSY-I, 97% of the target has been achieved. PMGSY-III targets 40% lesser length than constructed over the last five fiscals.

The PMGSY-III, announced in the Union Budget 2019-20, aims to consolidate 125,000 km road length in states over the next five years. The scheme will also include 'through routes' and 'major rural links' that connect habitations to Gramin Agricultural Markets (GrAMs), higher secondary schools and hospitals.

It will entail an estimated cost of Rs 80,250 crore (central share Rs 53,800 crore and states' share Rs 26,450 crore).

The road length to be constructed under PMGSY-III is significantly lower than 218,000 km constructed under the umbrella scheme between fiscals 2015 and 2019. CRISIL Research expects investments in rural roads to slow down ~10% over the next five years, due to the lower targets.

Rural road construction (in km) in fiscal 2020 stood at ~27,000 km, almost half of ~49,000 km constructed in the previous year. In fiscal 2021, the construction was ~37,000 km and in fiscal 2022, ~42,000 km. Last fiscal, the construction remained muted and failed to achieve the target. This fiscal, the target has been cut to 38,000 km.

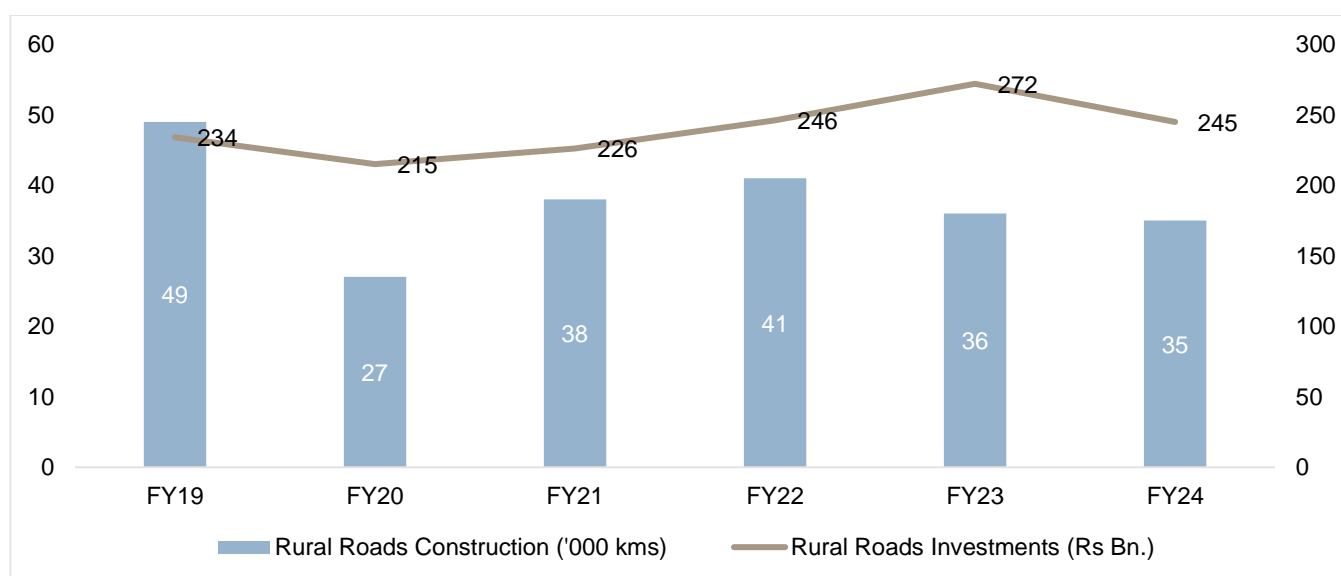
After fiscal 2017, central budgetary allocation to the scheme was kept at Rs 190 billion. In fiscal 2023, budgetary allocation was increased to Rs 195 billion. The actual expenditure, however, was lower than the allocation last fiscal, with achievement ratio slipping to 74% from 81% in fiscal 2019. Total investment in PMGSY, both state and Centre, was Rs 234 billion in fiscal 2019, up 35% from Rs 173 billion in fiscal 2018, because of an uptick in the length being constructed and higher cost per km.

Despite the challenges, the progress under PMGSY has been satisfactory. The vertical-wise details of achievement under the PMGSY (overall) are as follows:

Vertical	Sanctioned			Completed		
	No of roads	Road length (in km)	No of bridges	No of roads	Road length (in km)	No of bridges
PMGSY-I	164806	645605	7516	159783	613030	5864
PMGSY-II	6700	49885	765	5755	46468	562
RCPLWEA	1030	10231	463	363	5310	135
PMGSY-III	9972	77129	708	1984	29773	96
Total	182508	782850	9452	167885	694581	6657

Source: PIB, CRISIL MI&A CONSULTING

Investment in rural road construction



Source: Ministry of Rural Development, CRISIL MI&A CONSULTING

Residual construction target under PMGSY-II and future targets under PMGSY-III are largely concentrated in northern and eastern states in the country. It is expected that Odisha would see 15-20% of the targeted rural road construction under the PMGSY, Assam 9-11%, and Arunachal Pradesh, Bihar and Uttarakhand 5-10% each. Other states such as West Bengal and Himachal Pradesh and Union territory of Jammu also have potential for rural road construction under the scheme.

Demand drivers

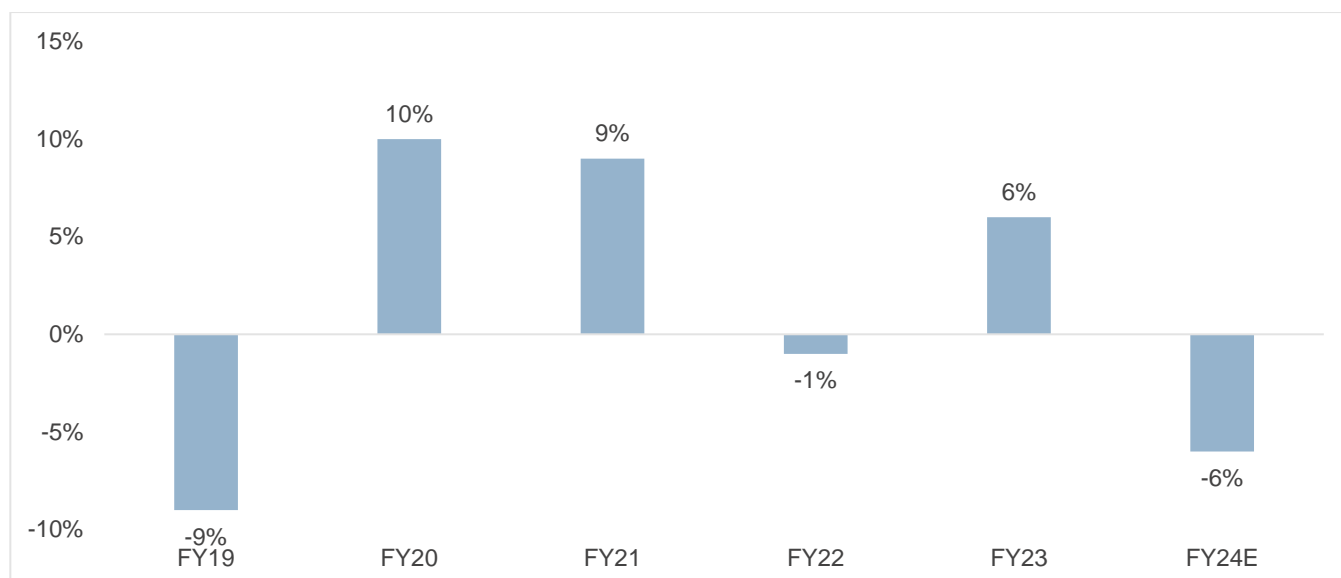
Tractor demand in the country is mainly dependent on farmer incomes from agricultural operations, which, in turn, gets impacted by various factors such as monsoon, crop prices, government procurement, etc. The government regulation governing rural infrastructure development also affects non-farm tractor demand, which accounts for roughly 20-25% of overall domestic demand for the vehicles. Additionally, availability of formal financing channels also supports the demand.

Risk factor	Impact
Monsoon performance	<div>Low Medium High</div>
Crop prices	<div>Low Medium High</div>
Government regulation	<div>Low Medium High</div>
Finance availability	<div>Low Medium High</div>

Monsoon performance

The south-west monsoon (Jun-Sep) and to some extent the north-east monsoon (Oct-Dec) are critical to the Indian agriculture sector as the overall farm output is dependent on the rains. A poor monsoon with uneven geographical spread and an unseasonal rainfall can severely impact the farm output, impacting the farmers' income and denting the rural economy. This, in turn, affects tractor demand. Monsoon, therefore, is the biggest risk factor for the tractor industry.

In fiscal 2018, the monsoon was normal and tractor demand saw revival, with sales increasing a healthy 22% on-year. In fiscal 2021, 9% above normal monsoon and positive retail sentiments contributed towards a substantial 27% on-year increase in tractor sales. In fiscals 2022 and 2023, monsoon has been normal, thereby contributing towards higher tractor sales, although in fiscal 2023 unseasonal rainfall in March damaged rabi crop to some extent impacting the farmer income and overall crop production. This fiscal, south-west monsoon was delayed in many states impacting the outlook for kharif.



Source: IMD, CRISIL MI&A CONSULTING

Crop prices

Though the central government announces MSPs for 22 crops, only paddy and wheat crops get procured on large scale. Other crops (pulses, oilseeds, vegetables, etc) are mostly sold to mandis/ private traders, and thus subject to high price volatility and cartelisation. Hence, even if the production is in surplus, subdued crop prices can have a negative effect on farmers' cash flow, and, in turn, impact their ability to purchase tractors.

Government regulation

There is significant government intervention in both agri and non-agri aspects of the rural economy. If the increase in MSP is marginal it hurts farm sentiments. The government's monitoring of sand mining activities, funds disbursement towards rural infra development, which are also key drivers for non-farm tractor demand (commercial/non-farm demand of tractors accounts for 15-20% of total tractor demand), can also have a significant impact on the industry.

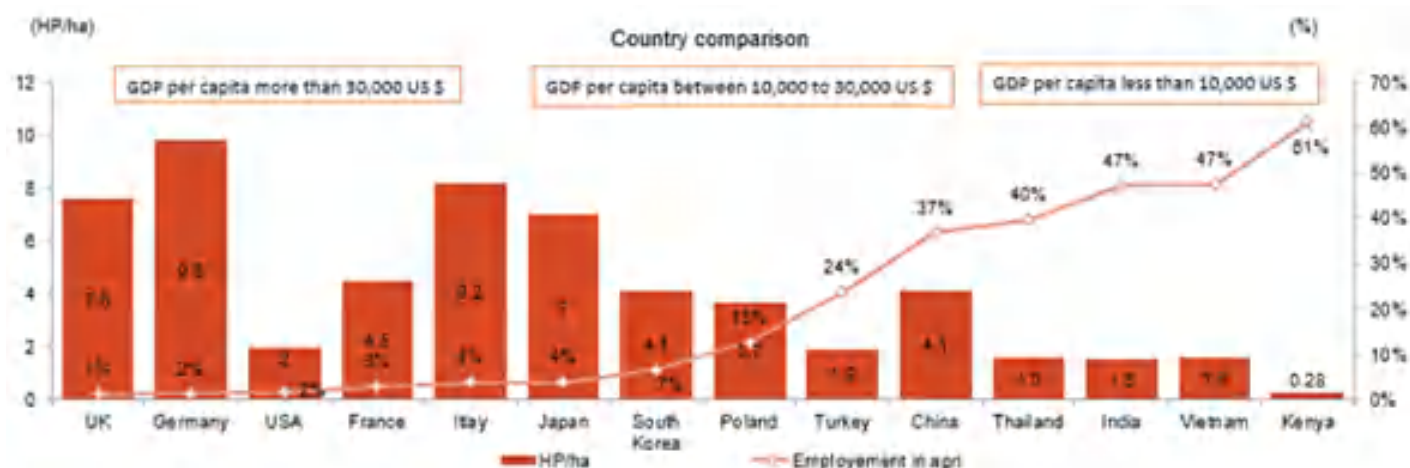
In fiscals 2021 and 2022, illegal mining was at a standstill in states such as Bihar, Jharkhand and Uttar Pradesh, which impacted commercial demand for tractors negatively. Last fiscal, a decline in construction led to slower growth in commercial demand. The factors that are impacting the demand this fiscal are ban on illegal mining and change in rules and regulations governing operation of brick kilns.

Cross-country comparison indicates healthy demand potential

Current tractor penetration in India as of fiscal 2023 is estimated to ~1.8 hp/ha (horsepower per hectare). Tractors are fast replacing bullock carts and labour, as renting a tractor or owning a low-hp tractor is cost-effective. Moreover, tractors earn rental income and help increase cropping intensity (multiple crops sown on the same land). In developed countries, tractor penetration is estimated to be in the range of 3-4 hp/ha, which facilitates superior crop yields relative to India. Even China, having a landholding size of 0.6 ha, has tractor penetration of 4.1 hp/ha.

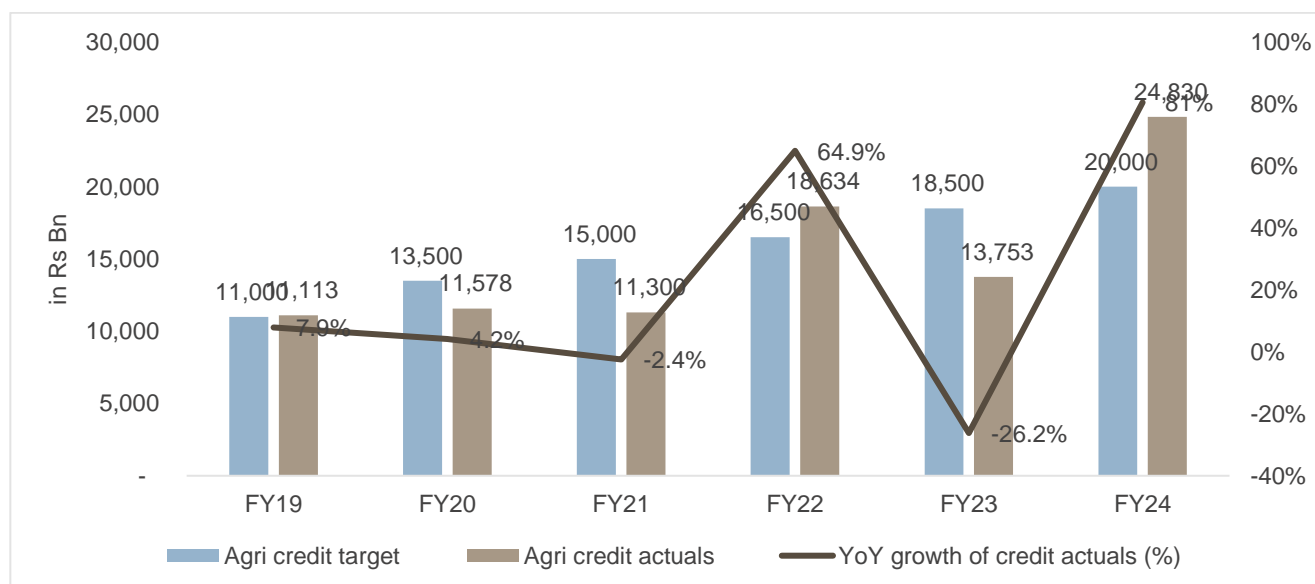
Lower employment in agriculture and higher GDP per capita are indicators for the countries having higher hp/ha. Hence, opportunity in this space is substantial given relatively low mechanisation levels in India.

Cross-country comparison of hp/ha



Finance & credit availability

Availability of formal financing channels also plays an important role in enabling industry growth as nearly 70-75% of the tractors purchased are backed by loans. However, as farm incomes are dependent on vagaries of monsoon and any failure in rainfall leads to rise in NPAs, financiers are cautious towards disbursing tractor loans. This impacts tractor sales. For instance, in last and this fiscal, financiers in Andhra Pradesh and Telangana have reduced tractor financing owing to increase in delinquency.



Source: CRISIL MI&A Consulting

Banks (public, private and other banks) account for 35-40% of the total tractor loan book. NBFCs account for the balance 55-60%. However, PSBs have more NPAs than private banks and NBFCs.

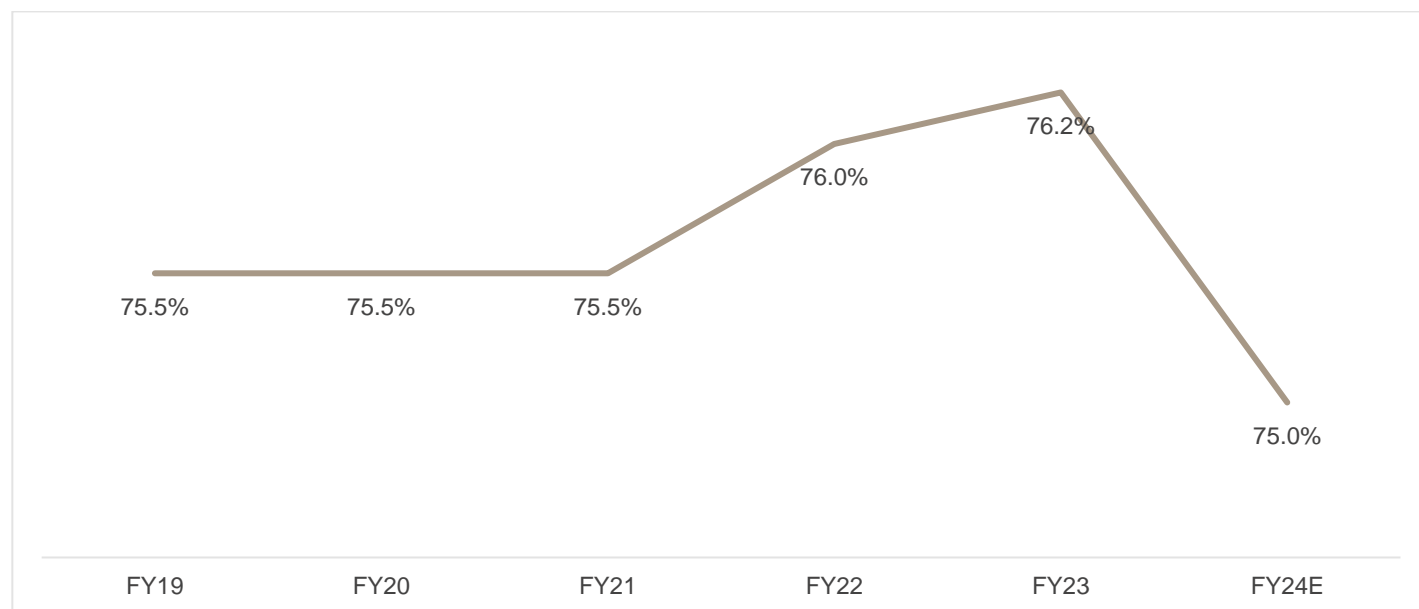
As majority of Indian farmers have low purchasing power, credit availability is key to boosting tractor demand. Currently, about 70-75% of the tractors are purchased on credit. This steady growth along with the government's emphasis on increasing agriculture credit has helped boost the domestic tractor demand. Tractor loans are easy to come by since agricultural credit is part of priority sector lending.

In Budget 2023-24, provision of Rs 450 crore has been made for the Digital Agriculture Mission started by the Modi Government, and about Rs. 600 crore allocated for the promotion of Agriculture sector through technology.

The total budget of the Ministry of Agriculture and Farmers Welfare, including Agricultural Education and Research, is about Rs 1.25 lakh crore in FY24. Out of this, provision of Rs. 60,000 crore has been made for the Pradhan Mantri Kisan Samman Nidhi (PM-Kisan).

Target for Agricultural credit has been increased to Rs 20 trillion from Rs 18.5 trillion in FY24

LTV (Loan to Value Ratio) rates



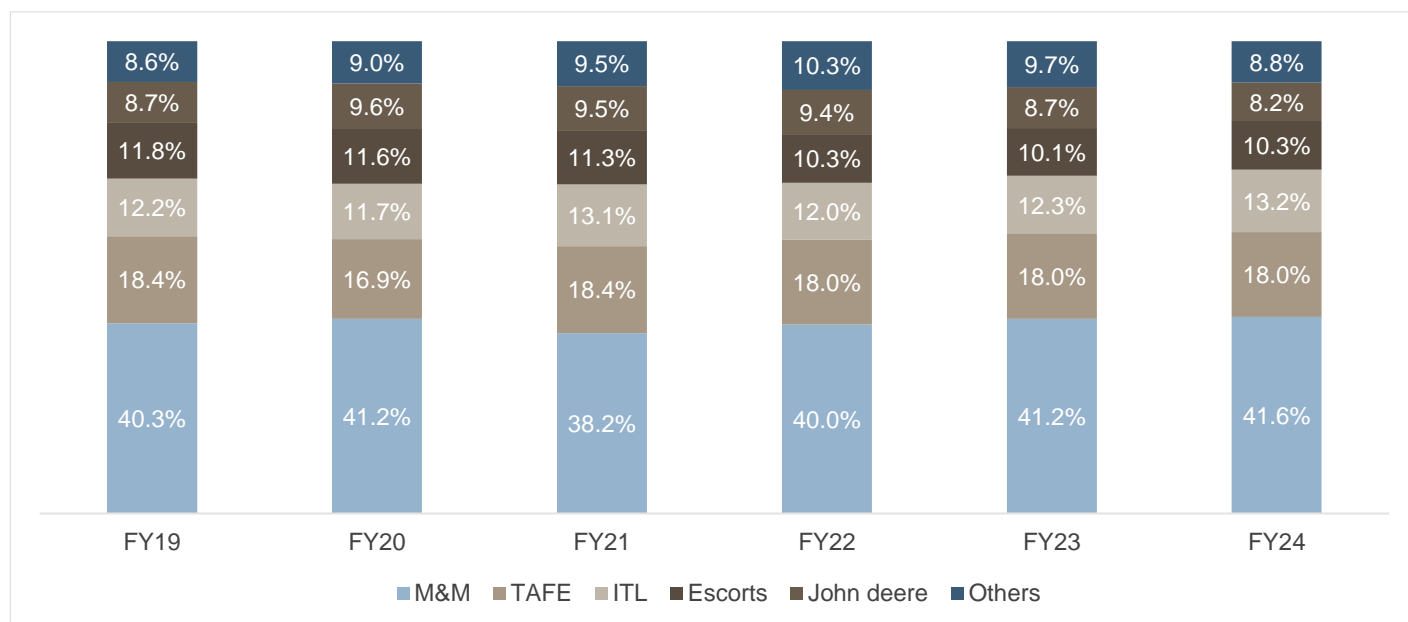
Note: E - estimated

Source: CRISIL MI&A CONSULTING

Competition

The structure of the domestic tractor industry has remained largely steady over the years. Mahindra & Mahindra (M&M) continued to lead with 41.2% market share and Tractors and Farm Equipment Ltd (TAFE) remained a distant second with 18% market share as of fiscal 2023. A strong pan-India network reach, strategic location of manufacturing facilities, good brand equity and a comprehensive product range from <20 horsepower (hp) to >50 hp have been the major factors behind M&M's consistent dominance of the industry.

Player-wise domestic market share (volume-wise): M&M gained significant market share last fiscal



Source: CRISIL MI&A CONSULTING

Going forward, CRISIL Research expects the competition in the industry to intensify further. However, the top five players will continue to account for 85-90% of the industry by volume. A strong distribution network, brand recall, captive financiers and diverse product range are critical to maintain market position in the tractor industry.

Tractor exports

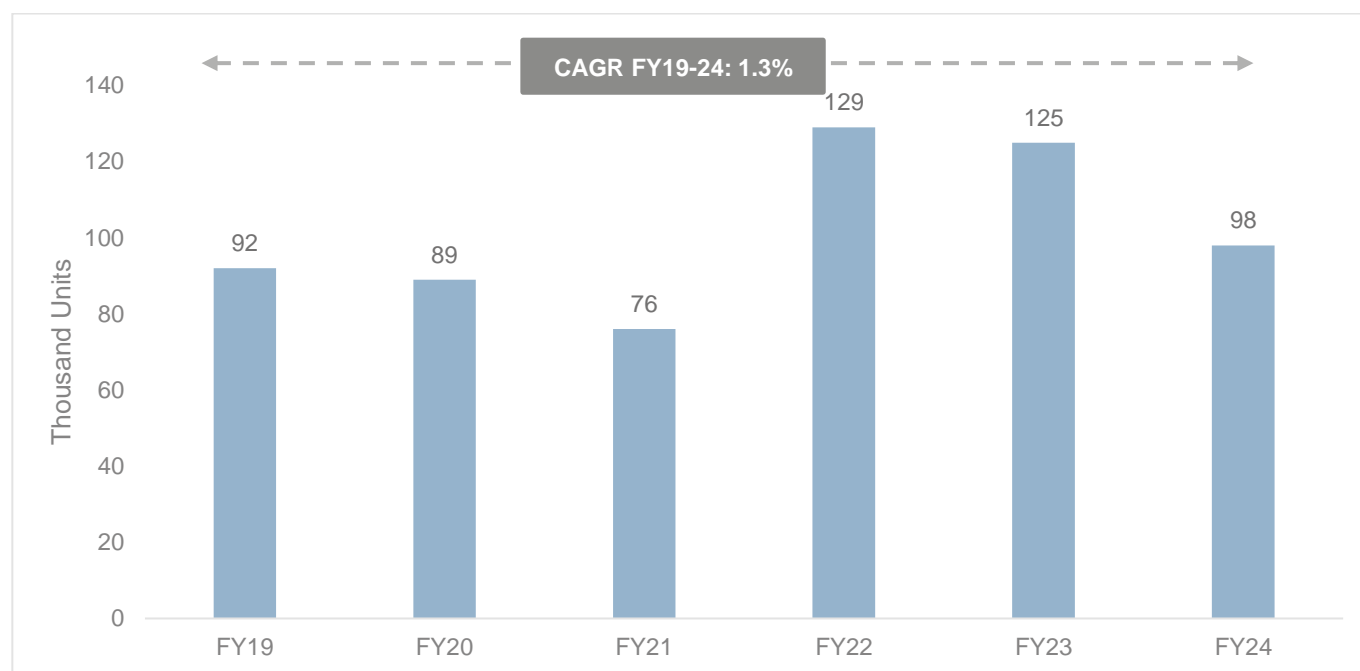
Exports, accounting for about 10% of the overall tractor sales as of fiscal 2024, on a low base of 90,000-100,000 post recording a 23-25% on-year decline in fiscal 2024. Revival in demand from the US, Europe and Asia to further support growth.

Strategic push, such as setting up a base in foreign countries, by players to cater to the global demand would aid export sales. ITL's Solis brand has also been gaining popularity in the European markets. With most of the global companies de-risking exports from China due to the complexities and disruptions in the nation, India has become the natural hedge against Chinese exports. Further, with most of the companies equipped to comply with TREM IV norms, exports have bloomed in the past few years.

The export data for Indian tractors over the years from FY19 to FY24 reflects a fluctuating trend in the international market. This data underscores the influence of various global and domestic factors on the tractor export industry. The CAGR for this six-year period, considering both the ups and downs, stands at approximately 1.3%. While this growth rate may appear moderate, it signifies the resilience of the Indian tractor export industry in the face of various economic and global challenges.

The fluctuations in export numbers can be attributed to factors such as changes in global demand, fluctuations in foreign exchange rates, and economic conditions in importing countries. The resurgence in exports in recent years suggests that Indian tractor manufacturers have adapted to these challenges, improved product quality, and expanded their global reach. This export data underscores the importance of international markets for the Indian tractor industry and the need for ongoing efforts to maintain and enhance competitiveness in the global arena. Despite the fluctuations, the industry remains a vital contributor to India's economic growth and global trade.

Tractor exports from India has witnessed a growth of 1.3% CAGR between Fiscal 2019-24



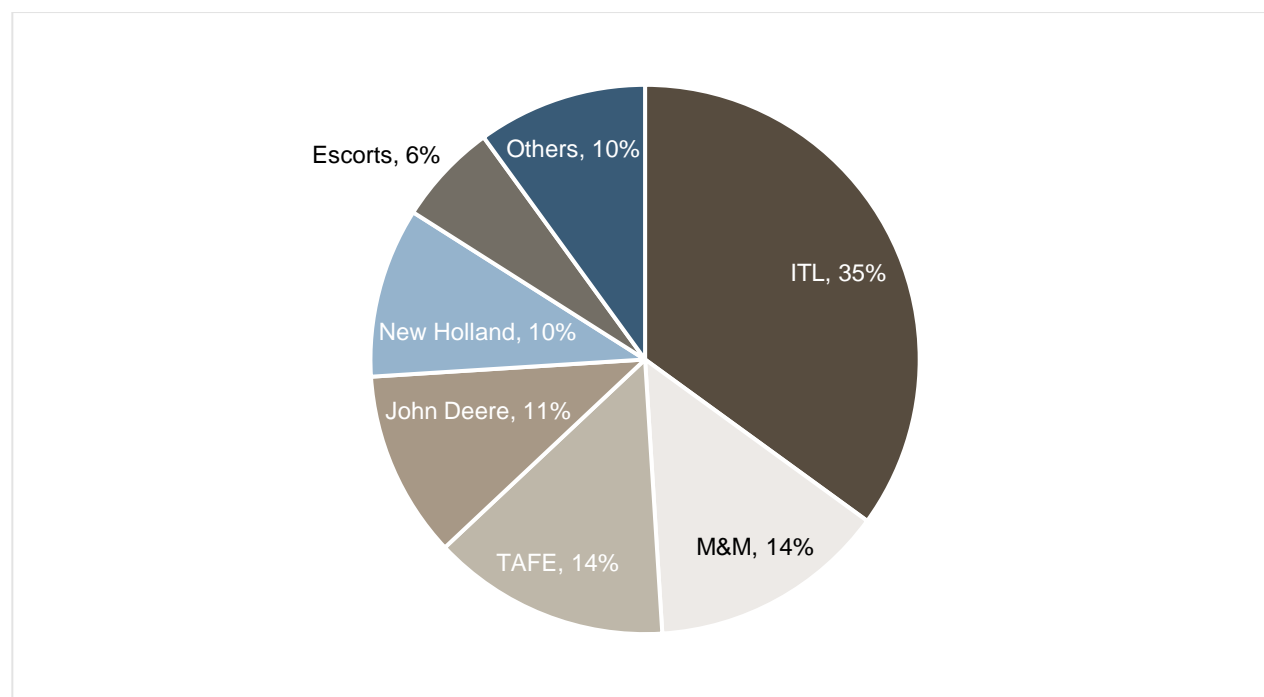
Source: TMA, CRISIL MI&A Consulting

>51 hp segment dominates tractor exports

More than 51 hp tractors accounted for about 62% share in India's tractor export basket for fiscal 2023, the share has come down to 49% in FY24 as demand for lower hp tractors rise. Rising demand for Indian tractors the US and Europe for hobby farming has fuelled demand for lower hp tractors. International tractors limited (ITL) is the largest player in <30 hp tractors while John Deere leads in >51hp tractors.

ITL, John Deere and Escorts have been focusing on growing exports to insulate themselves from the cyclic domestic market demand. Market share of ITL has increased from 25% in fiscal 2021 to 35% in FY24. Escorts reduced exports from its Poland factory and has started exporting from India. Mahindra is a dominant player in exports to the United States and Asian nations. John Deere has been using its Indian manufacturing plant to export to the US, its home country.

Player-wise share of tractor exports (fiscal 2024)



Source: TMA, CRISIL MI&A Consulting

7.2. Outlook of Indian tractor industry

Domestic demand to grow 4-6% over next five years on a high base (fiscals 2024 – 2029)

CRISIL Consulting projects domestic tractor sales to expand at 4-6% compound annual growth rate (CAGR) during fiscals 2024 to 2029, after factoring in one to two years of erratic monsoon during the period along with healthy sales expected in the remaining years. From fiscal 2018 to 2023, the industry registered a CAGR of 5% due to healthy sales in fiscals 2017, 2018, 2021 and 2023.

However, anticipated decline in rabi profitability, low subsidy disbursement in the first quarter amid general elections and slower growth in commercial demand to prevent further growth.

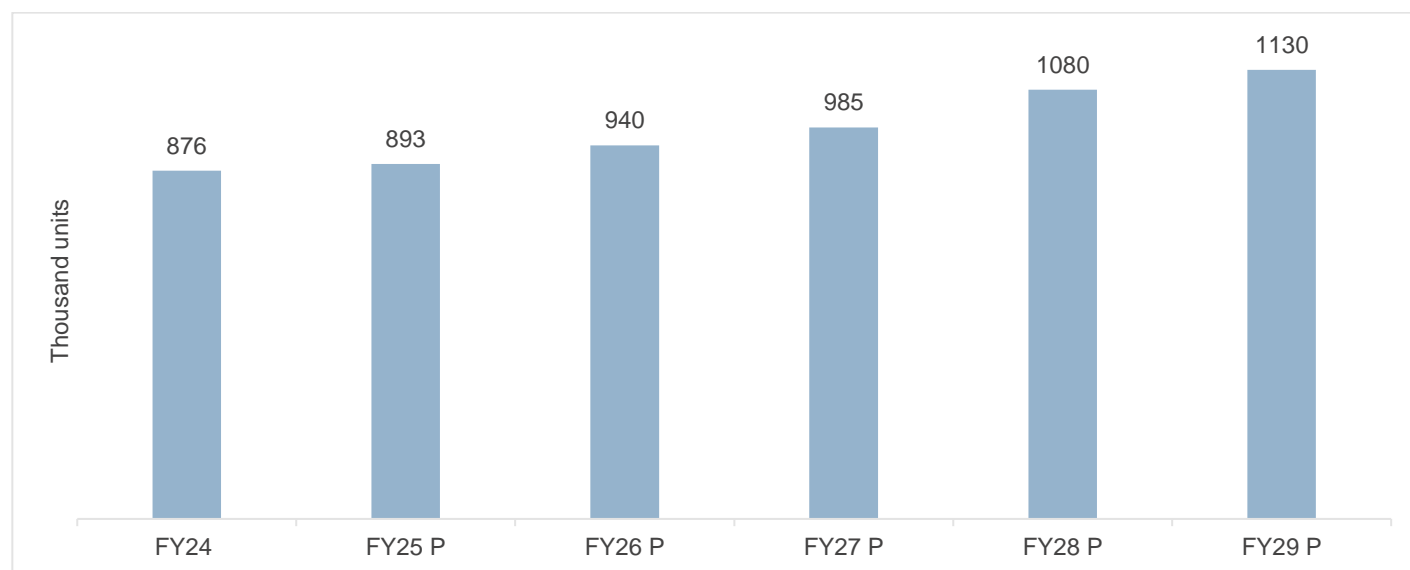
In FY25, with IMD's (Indian Meteorological Department) prediction of a normal monsoon season, domestic tractor sales are expected to grow by 2-4% on-year in volume terms. A normal monsoon season is expected to lead to healthy reservoir levels thereby positively impacting farmer sentiments. A 8-10% on-year increase in volumes up for replacement to further support growth in the fiscal. Anticipated healthy rainfall is expected to lead to higher festive demand in the second and third quarters. Healthy reservoir levels to boost rabi acreage and thereby crop profitability which, in turn, is expected to boost tractors sales in the last quarter of the fiscal.

Growth up to fiscal 2029 will be on the back of low tractor penetration in the country (three tractors per 100-hectare area), government's focus on improving farm incomes through various schemes, promotion of farm mechanisation, and investments to improve rural infrastructure.

Tractors is a cyclical industry and has been observed that whenever the industry gets into a downturn, it takes 4-5 quarters for the industry to recover. Thus, assuming that the industry will be impacted by poor monsoon for one to two years between fiscal 2024 and 2029 with the industry taking 4-5 quarters to recover, our long-term assessment suggests that the tractor industry will grow at a CAGR of 4-6%. The growth will be supported by low tractor

penetration in India (3 tractors per 100-hectare area); government's focus on improving farm incomes through various schemes, promoting farm mechanization; and investments to improve rural infrastructure.

Tractor industry sales expected to increase 4-6% between fiscals 2024 and 2029



E: Estimated; P: Projected

Source: CRISIL MI&A Consulting

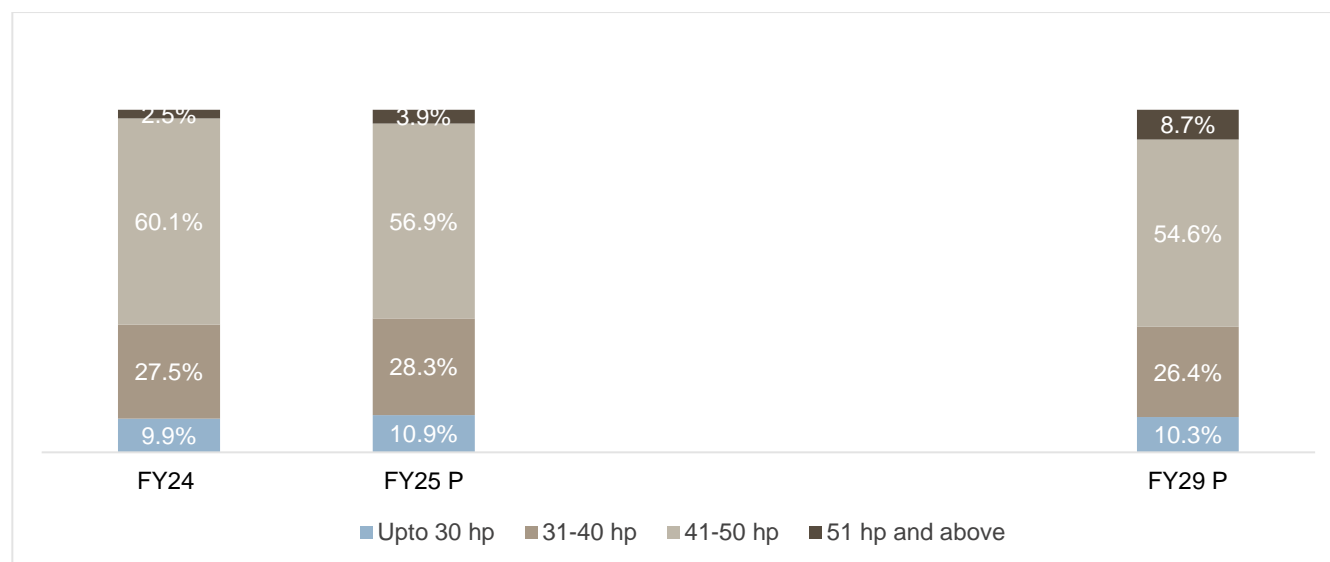
Replacement demand is expected to be higher by 4-6% on-year in fiscal 2024 and rise by 8-10% on-year in fiscal 2025 with healthy sales registered in fiscals 2017 and 2018.

Segment-wise growth outlook (fiscals 2024 – 2029)

CRISIL expects upgradation from 31-40 hp tractors to 41-50 hp tractors over the next five years, as farmers are likely to upgrade to higher hp segments, realising the benefits of mechanization and higher productivity from increased usage of implements along with tractors. Additionally, the growing trend of collaborative farming, increasing commercial usage, and higher irrigation intensity will boost usage of higher hp tractors. However, in case of a decline in farm incomes on account of weak monsoon, farmers tend to shift towards lower hp tractors (below 40 hp). We expect a more gradual movement towards 51 hp and above tractors, as they are less amenable to multipurpose applications (like the 41-50 hp) and the price gap is big (at least 10-15% between a 50 hp and a 55-60 hp tractor since emission norms change at 50 hp).

The market for 70-75 hp tractors is niche and is still evolving in India. These tractors are used mainly for farming along with implements, while 41-50 hp tractors can also be used for haulage and commercial activities such as sand mining. This increases their viability as these can be used for at least 700 hours a year.

Higher hp tractors to see rise in proportion over long run



E: Estimated; P: Projected

Source: CRISIL MI&A Consulting

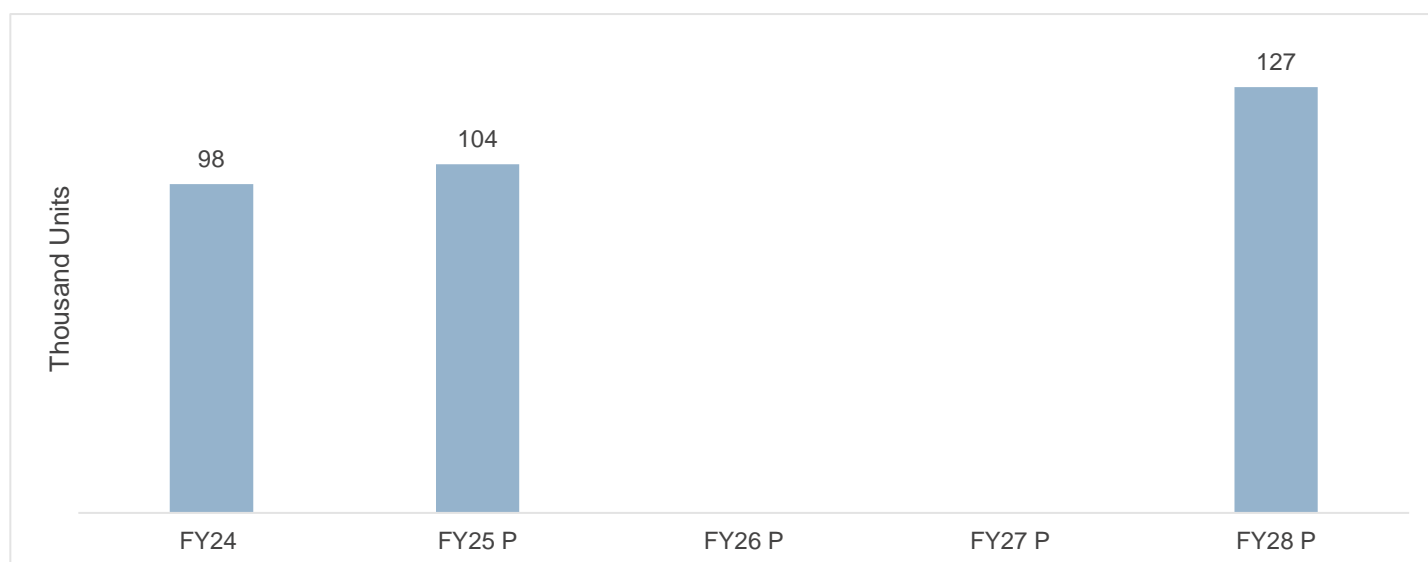
Exports expected to grow at a CAGR of 5-7% from fiscal 2024 to fiscal 2029 amid healthy demand from USA and other Asian and European countries

Exports, accounting for about 10% of the overall tractor sales as of fiscal 2024, are expected to grow by 8-10% on-year to 100,000-110,000 units in fiscal 2025 on a low base of 90,000-100,000 post recording a 23-25% on-year decline in fiscal 2024. Revival in demand from the US, Europe and Asia to further support growth.

Strategic push, such as setting up a base in foreign countries, by players to cater to the global demand would aid export sales. ITL's Solis brand has also been gaining popularity in the European markets. With most of the global companies de-risking exports from China due to the complexities and disruptions in the nation, India has become the natural hedge against Chinese exports. Further, with most of the companies equipped to comply with TREM IV norms, exports have bloomed in the past few years.

The compound annual growth rate (CAGR) between fiscals 2024 and 2029 is expected to be 5-7%. The USA, Europe & Asia are likely to remain the focal regions for long-term exports. Further, with India emerging as an export hub for relatively small tractors (30-75 horsepower/hp), and major companies increasing focus on international markets with the launch of 90-120 hp tractors, we expect sustainable export growth over the next five years. Rising demand for <30 hp tractors for gardening and hobby farming purposes is also expected to support growth.

Exports expected to grow at a CAGR of 5-7% from fiscal 2024 to fiscal 2029



E: Estimated; P: Projected

Source: CRISIL MI&A Consulting

More than 51 hp tractors accounted for about 62% share in India's tractor export basket for fiscal 2023, the share has come down to 49% in FY24 as demand for lower hp tractors rise. Rising demand for Indian tractors the US and Europe for hobby farming has fuelled demand for lower hp tractors. International tractors limited (ITL) is the largest player in <30 hp tractors while John Deere leads in >51hp tractors.

Key growth drivers

Replacement demand expected to be higher

A large part of domestic sales is driven by replacement demand. Typical holding period for a tractor is around 6 to 9 years with most of the tractors being replaced in the country within 7-8 years. Of the overall domestic demand, 50-60% of the sales are replacement demand. For states having high penetration of tractors such as Punjab and Haryana, the replacement demand accounts for about 70-80% of the total sales. While states where farmer incomes are lower as compared to Punjab and Haryana have a lower replacement cycle (higher age tractors) compared to the industry average.

Replacement demand is expected to be higher by 4-6% on-year in fiscal 2024 and rise by 8-10% on-year in fiscal 2025 with healthy sales registered in fiscals 2017 and 2018.

Non-farm usage of tractors on the rise

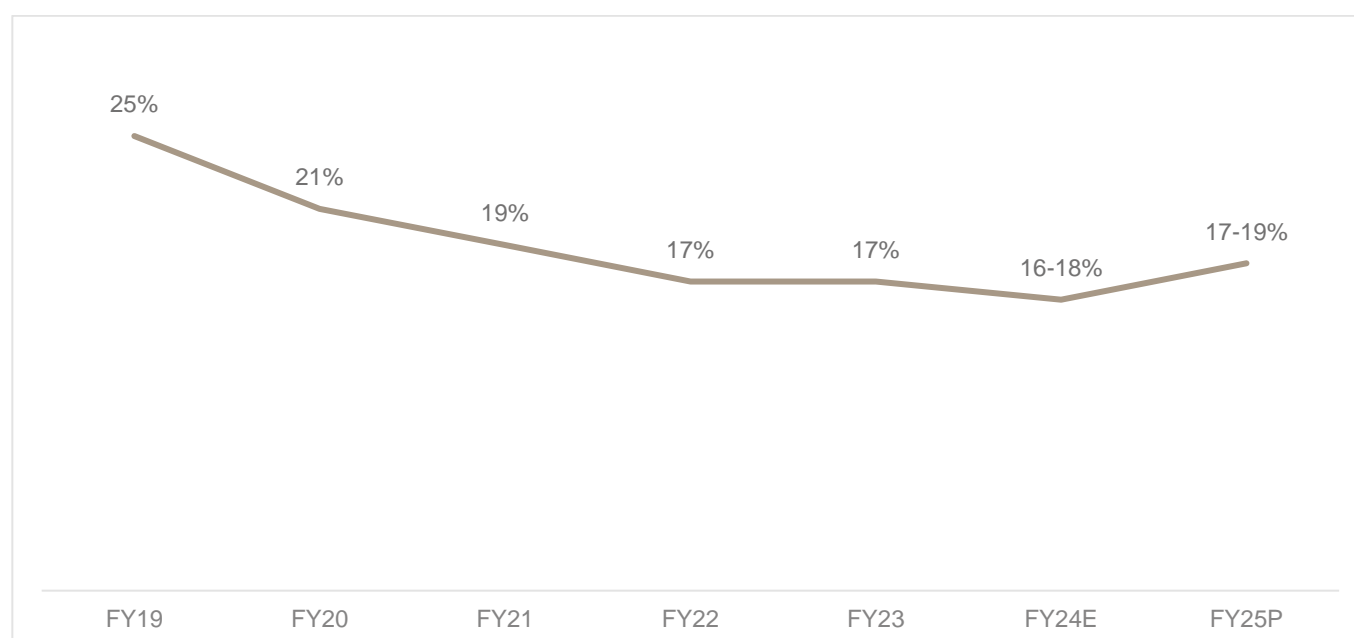
Tractors are also used in mining, construction and haulage activities. Currently, non-farm usage accounts for 18-23% of demand for tractors. Tractor usage in non-farm activities has been increasing, with the government's focus on improving rural infrastructure. Tractors are used for carrying construction material such as bricks, cement and pipes. Tractors are also being looked at as a better alternative to commercial vehicles, as tractors are more economical, can carry heavy weight, and can also manoeuvre easily on rough, rural roads.

Commercial demand for tractor account for 16-25% of overall tractor demand. Apart from their primary application in agriculture operations, tractors are also used to haul bricks, sand, and farm produce. In poor crop years and in

months when there is no agricultural activity, renting out tractors for commercial purposes provides farmers an alternate source of income, thereby proving to be a good hedge. Some tractors are designed specifically for haulage operations and are used exclusively in commercial activities. Based on our industry interactions, tractors are also used as an alternative to pickups for haulage purposes.

Commercial demand is expected to rise at a slower pace in fiscal 2025 with no announcement for the next phase of PMAY-G (with current phase ending in March 2024) coupled with lower investment expected in PMGSY. In fiscal 2024, we estimate commercial demand to remain rangebound, due to slower demand from construction and sandmining activities. Illegal mining activities have been at a standstill in states such as Bihar, Jharkhand and Uttar Pradesh which is expected to impact commercial demand negatively in fiscal 2025.

Commercial demand expected to remain rangebound in fiscal 2025



E: Estimated; P: Projected

Source: CRISIL MI&A Consulting

Rental model and low-cost tractors key to penetrating fragmented land holdings in India

Despite the huge potential total arable land offers, the fragmented land-holding pattern in India remains a hurdle. With over 80% of land holdings being small and marginal (less than 2 ha), most farmers are unable to afford tractors. They depend on renting tractors or buying small tractors to improve productivity, a trend which is rapidly gaining hold.

Custom Hiring Centres (CHC) are a major component of the government's 'Sub-Mission on Agricultural Mechanisation (SMAM)' policy. These centres maintain farm equipment and machinery which can be rented out, especially to small and marginal farmers who cannot afford them. The state governments of Karnataka, Andhra Pradesh, Madhya Pradesh, Telangana, Odisha and Punjab have been promoting CHCs on public-private partnership (PPP) basis through training, demonstration and financial incentives.

Private sector participation via unique business models is also improving farm mechanisation:

- EM3, a new entrant in the farm machinery industry, is creating a pan-India network of Samadhan Kendras which operate as CHCs, with its focus currently on Madhya Pradesh, Rajasthan and Uttar Pradesh.

- Zamindara Farm Solutions uses a combination of library and radio taxi models to provide farm equipment services, with major operations in Punjab.
- OLAM India is using CHC in collaboration with agri-tech service providers for sugarcane harvesting in Madhya Pradesh.

India's agriculture ministry has developed a farm equipment rental app for Indian farmers, which lets them hire tractors, rotavator and other farm related machinery on rent with flexible tenures.

Highest number of CHCs are found in Punjab, UP, Tamil Nadu and Andhra Pradesh followed by Haryana and Odisha. Under SMAM (Sub-Mission on Agricultural Mechanization), ~13 lakhs of agricultural machinery have been distributed while ~15,180 Custom Hiring Centres have been established.

CHCs face challenges such as lack of awareness among consumers about farm equipment usage, availability issue, high initial investment cost, maintenance of farm machinery, and providing equipment specific to local cropping patterns. Monitoring of CHCs remains a major challenge. However, involvement of key stakeholders and introduction of favourable schemes and policies can make the CHC concept successful in India.

Over next few years (fiscals 2024 to 2029), the following structural factors to support growth:

- The government's objective of supporting farmers through direct income support and improvement in land productivity via soil health cards. These measures should improve farmers' crop yields and affordability, improve purchasing capacity and support tractor penetration.
- The government's renewed thrust on enhancing irrigation intensity and making the nation more drought-proof is expected to support agriculture growth and increase mechanisation.
- Custom-hiring centres (CHC) are being promoted through government incentives with number of CHCs rising at a CAGR of 18% from fiscal 2017 to fiscal 2023. The trend is catching up in Karnataka, Madhya Pradesh, Andhra Pradesh, Telangana, and Orissa and encouraging farmers to lease tractors. States such as Karnataka, Madhya Pradesh, Andhra Pradesh and Punjab are promoting such hiring centres through training, demonstrations and financial incentives.
- Tractor rental services made available on mobile applications by manufacturers -- such as Jfarm by TAFE and Trringo by Mahindra -- to prop up demand for tractors in long term. Global companies such as Hello Tractors in association with Aeris, a California-based technology company, is also planning to launch a pay-as-you-use tractor service for Indian farmers.
- Expected rise in commercial demand will boost sales in the coming years.
- Rising demand for lower hp tractor to cater to the small and marginal farm holds to drive growth.
- With increasing government focus on infrastructure, demand for haulage is also expected to rise boosting tractor sales.
- Higher government focus on agriculture and on farmers to lead to healthy crop prices impacting tractor demand positively.

8. Overview of the tyre industry in India

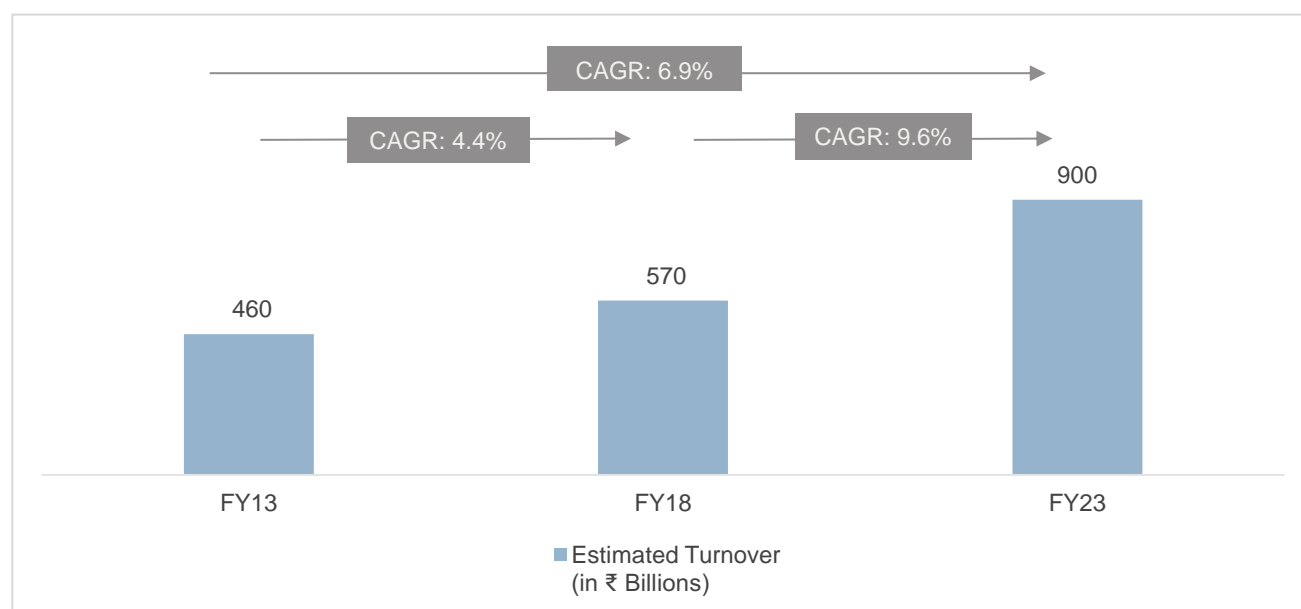
8.1. Industry turnover

The growing turnover of the Indian tyre industry in recent years can be attributed to increasing demand for vehicles, rising disposable incomes, increasing premiumisation of vehicles and tyres, the industry venturing into the luxury segment, growth in exports and reduction in import of tyres. The turnover has doubled in a decade from Rs 46,000 crore in fiscal 2013 to Rs 90,000 crore in fiscal 2023.

The domestic tyre industry is dominated by major players such as Apollo Tyres, Balakrishna Industries, Bridgestone, Ceat, JK Tyres, MRF and TVS Srichakra. These companies account for more than 80% of the tyre market in terms of revenue.

Global companies such as Michelin, Bridgestone, Goodyear and Maxxis have set up their manufacturing units in India. However, their share in the overall Indian tyre market continues to be low with customers being price sensitive.

Figure 1: Tyre industry turnover (Rs billions)



Source: ATMA; Turnover is based on revenue.

Note: Turnover for fiscal 2024 is not available in public domain.

8.2. Tyre exports

Tyre exports from India have seen flat growth this year. The global economy's challenges from recessionary conditions, rising interest rates, political upheaval, and a weakening of external demand impacted the growth momentum of Indian tyre exports.

CRISIL MI&A forecasts overall tyre exports to increase by 7-9% in fiscal 2029, with the two-wheeler tyre segment leading the growth. Indian two-wheeler OEMs' strong market presence in African and Latin American countries,

along with the enhanced reputation of Indian tyre brands, will support this expansion. However, exports in other segments are likely to decline due to decreased demand from advanced economies in Europe and America.

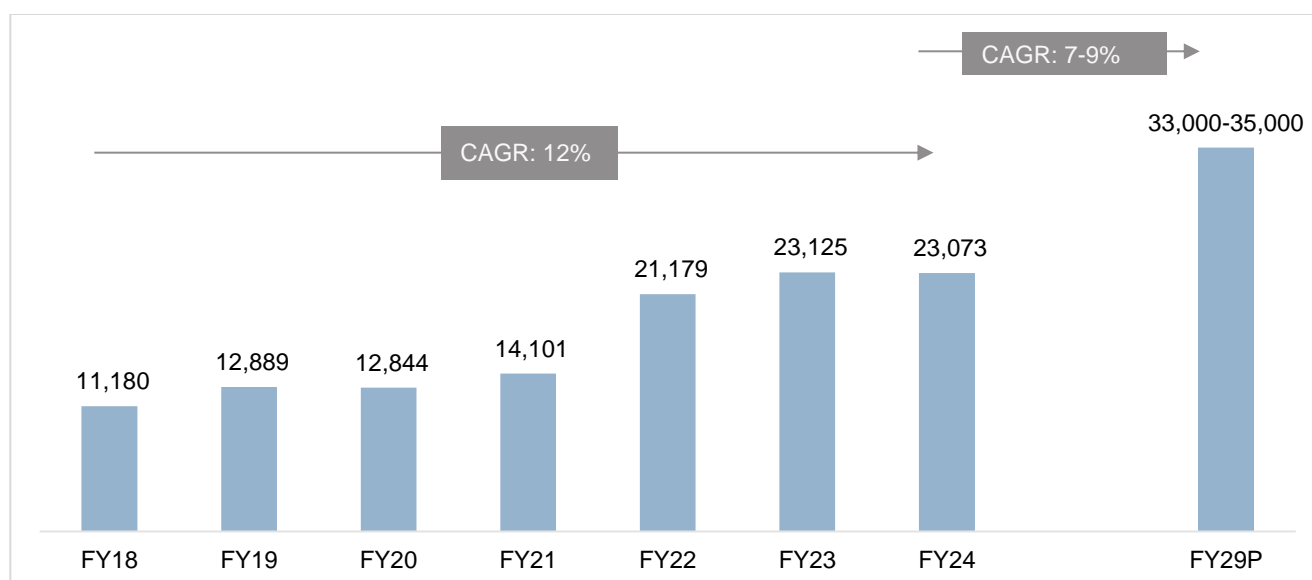
India's tyre exports declined to Rs 23,075 crore in fiscal 2024 from Rs 23,125 crore in fiscal 2023.

In fiscal 2024, the top export markets for Indian tyres were the US, Germany, Brazil, Italy, UAE, France, Philippines, Netherland, UK, Bangladesh, and Canada. The US continues to be the largest market for Indian tyres, accounting for 18% of the total tyres exported from the country during the year.

Increased performance and better durability at affordable prices in addition to China de-risking strategy adopted by companies across the globe bodes well for increasing tyre exports from India. The presence of multiple manufacturing units of Indian OEMs outside the country is increasing traction for Indian tyres in global markets as well.

The competitive performance and affordability of Indian tyres, combined with the global shift towards diversifying supply chains away from China, have positively impacted export growth. The establishment of manufacturing units by Indian OEMs abroad is also boosting the acceptance of Indian tyres in international markets. Moreover, increased investments in technology and innovation are expected to further solidify the position of Indian tyre manufacturers globally.

Figure 2: Tyre exports (Rs lakhs)



Source: ATMA, CRISIL MI&A Consulting

Figure 3: Region-wise tyre exports from India (Rs Lakhs)

Region	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Europe	3,74,585	4,25,153	4,00,776	5,15,249	7,73,320	7,53,342	7,92,730
North America	1,65,130	2,18,533	2,33,893	2,73,402	4,37,837	5,65,085	4,85,033
Asia	2,44,286	2,71,070	2,58,630	2,35,257	3,18,347	3,20,104	3,27,817
Latin America	1,03,433	1,05,548	1,11,330	1,16,090	2,20,146	2,59,008	2,48,394
Middle East	1,09,376	1,26,367	1,42,978	1,26,369	1,74,598	2,22,016	2,30,164
Africa	96,783	1,12,892	1,13,018	1,12,771	1,54,885	1,49,469	1,72,481

Others	24,365	29,324	23,749	30,935	38,783	43,469	50,675
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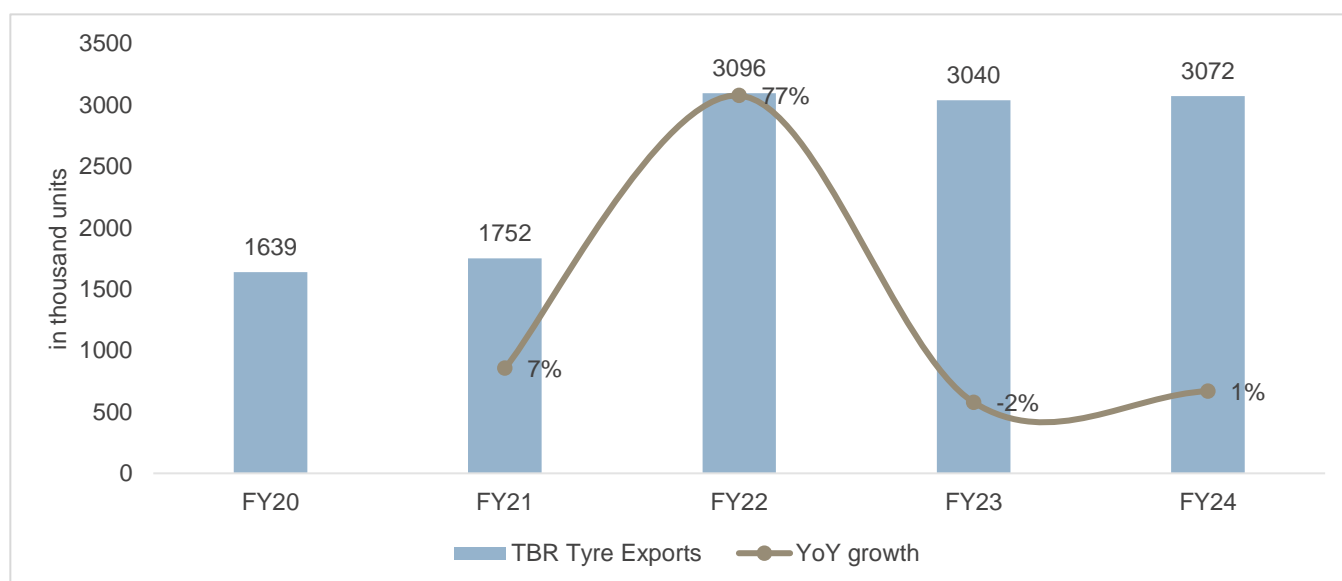
Source: ATMA, CRISIL MI&A Consulting

Radial Truck & Bus (TBR) Tyre

The moderation in CV tyre exports owing low demand from European market in fiscal 2024 expected to ease in fiscal 2025. The subdued demand in major economies owing to global slowdown has resulted in moderated growth in MHCV tyre exports. In fiscal 2025, in the overall exports growth is expected to be higher than fiscal 2024 owing to anticipated loosening monetary policies across the globe and subsequent increase in demand.

The exports of commercial vehicles (CV) segment declined 13% on a high base due to softening overseas demand in fiscal 2023. In fiscal 2023, truck and bus tyre exports declined 13% on-year after ~83% on-year growth in fiscal 2022. The decline in exports was majorly due to lower imports from developing nations such as Nepal, Brazil and Bangladesh, which witnessed 29%, 14% and 20% decline in their medium and heavy CV tyre imports, respectively.

Figure 4: Radial Truck & Bus (TBR) Tyre Exports ('000 units)



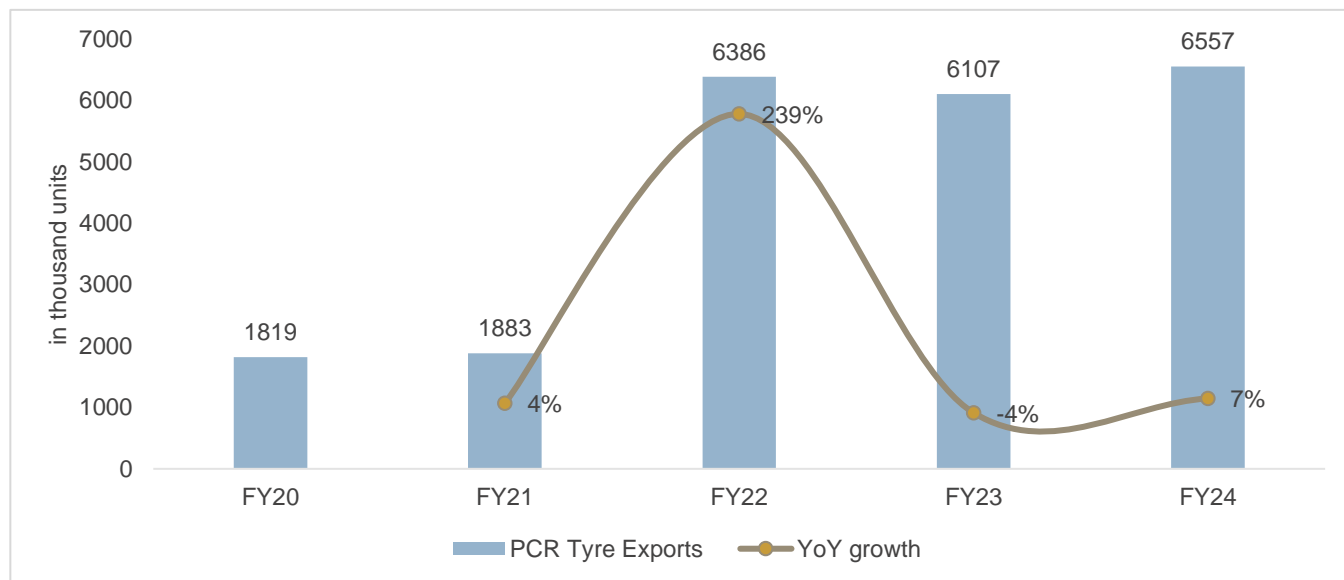
Source: DGFT, CRISIL MI&A Consulting

Passenger Car (PCR) Tyre

Tyre exports from the PCR segment grew at a moderate rate of 7% in fiscal 2024 and had declined 5% in fiscal 2023. The tyre exports this fiscal were led by increased demand from countries such as the Netherlands, Brazil, and the US.

Brazil has emerged as the largest importing country for Indian manufactured PCR tyres in fiscal 2024 replacing Netherlands in the previous year.

Figure 5: Passenger Car (PCR) Tyre Exports ('000 no.)

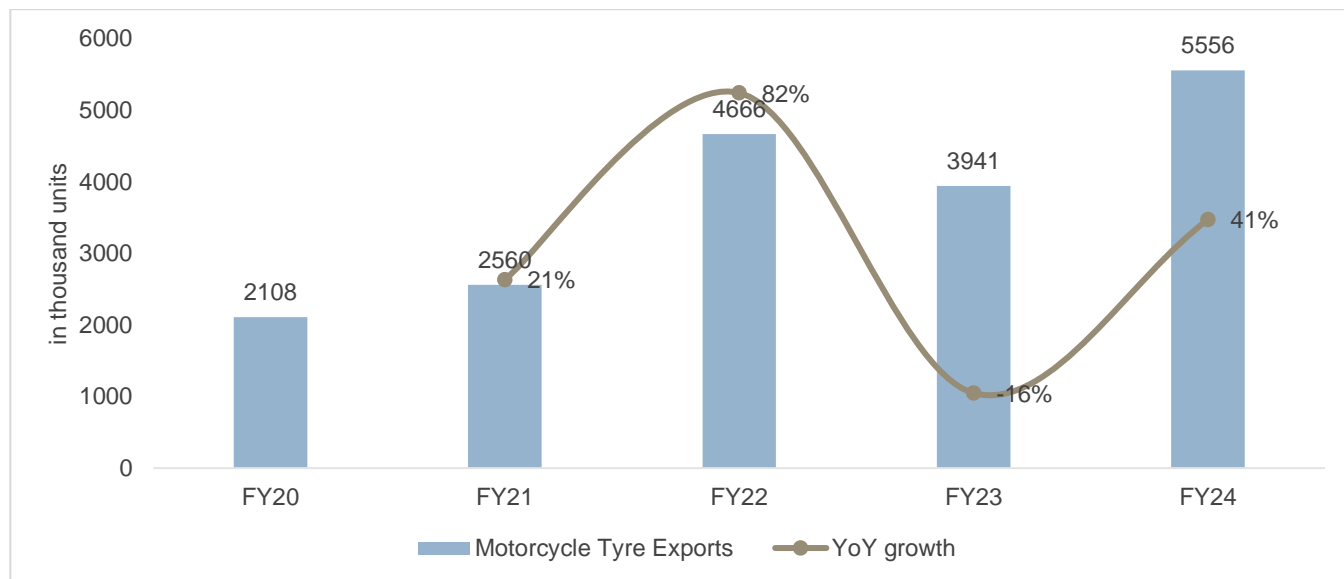


Source: DGFT, CRISIL MI&A Consulting

Motorcycle Tyre Exports

Motorcycle tyre exports from India overall grew by 41% during fiscal 2024 and had declined by 16% in fiscal 2023. The moderate growth is due to subdued demand from low-income nations such as Bangladesh and Nepal amidst global recession fears.

The emerging economies of Bangladesh and Colombia are the largest importing countries for Motorcycle tyres from India.

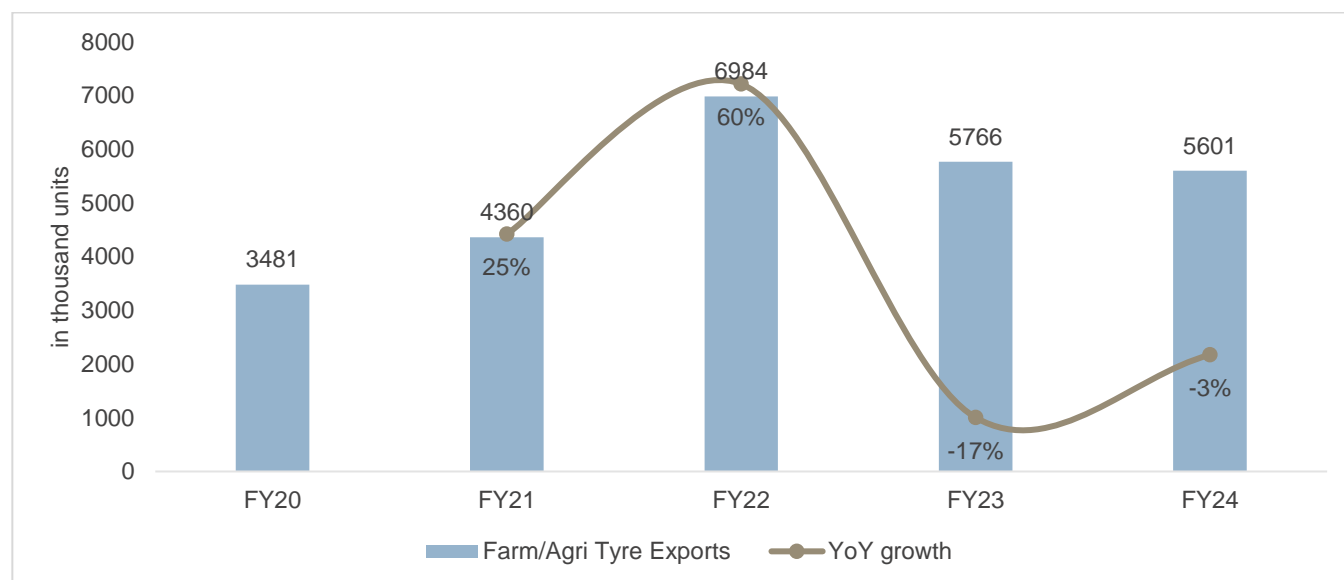


Source: DGFT, CRISIL MI&A Consulting

Agriculture (Tractor Front, Rear & Trailer) Tyre Exports

Farm/agricultural tyre exports also witnessed a decline of 3% in fiscal 2024 and a decline of ~17% on-year in fiscal 2023 led by decreased demand from Europe and US. USA and some of the European countries account for the largest share in Farm/Agri tyre exports from India.

Figure 6: Farm/Agri Tyre Exports ('000 no.)



Source: DGFT, CRISIL MI&A Consulting

8.3. Tyre imports

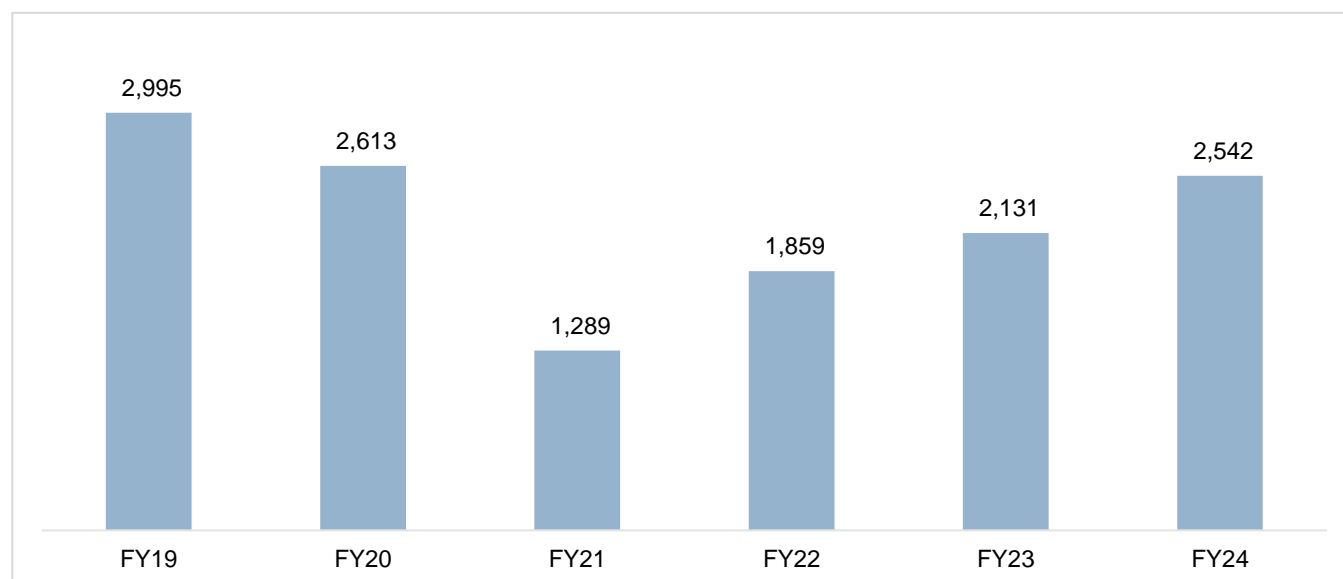
Tyre imports are declining on the back of government regulations that favour domestic players.

The tyre Imports in India went up by 19% in FY24. The rise in imports comes on the back of 15% growth in the previous year. Tyres over Rs 2500 crore landed in India during the period benefiting from low rates of duty under FTAs signed by the country.

In fiscal 2023, tyres worth Rs 2,131 crore were imported into the country. In volume as well as value terms, PCR tyres accounted for the largest share.

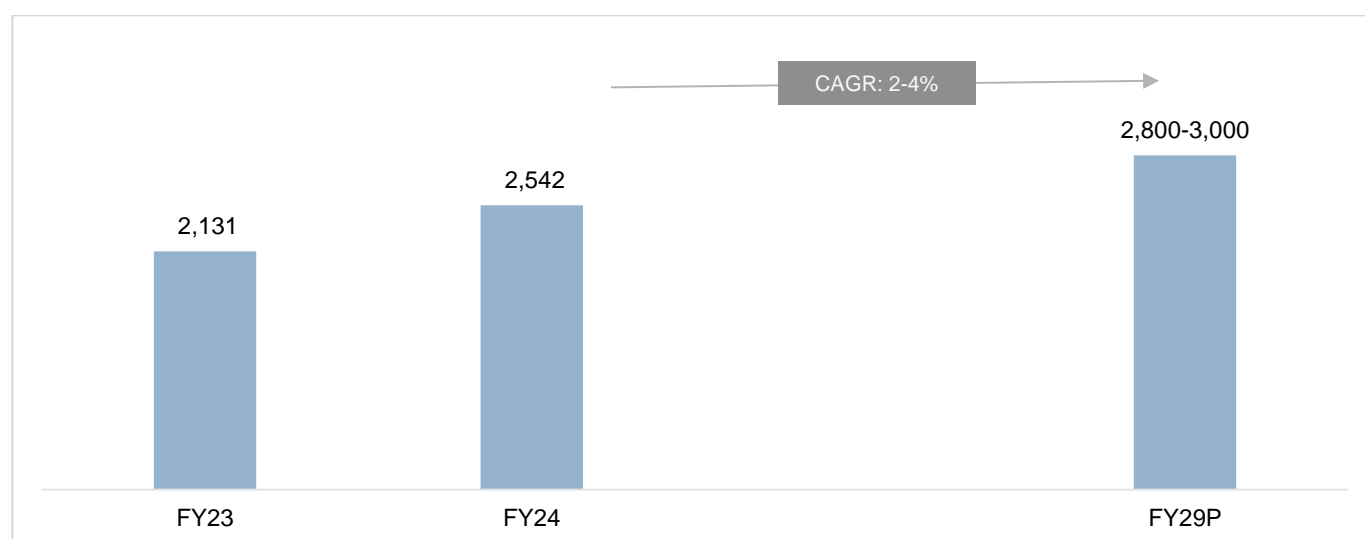
OTR/ Industrial tyres account for the largest share in overall tyre imports in India in value terms. The share of both PCR and TBR came down in fiscal 2024 while that of Motorcycle tyres went up in comparison to the previous year.

Figure 7: Tyre imports (Rs crores)



Source: ATMA, CRISIL MI&A

Figure 8: Projections on tyre imports (Rs. crores)



Source: ATMA, CRISIL MI&A

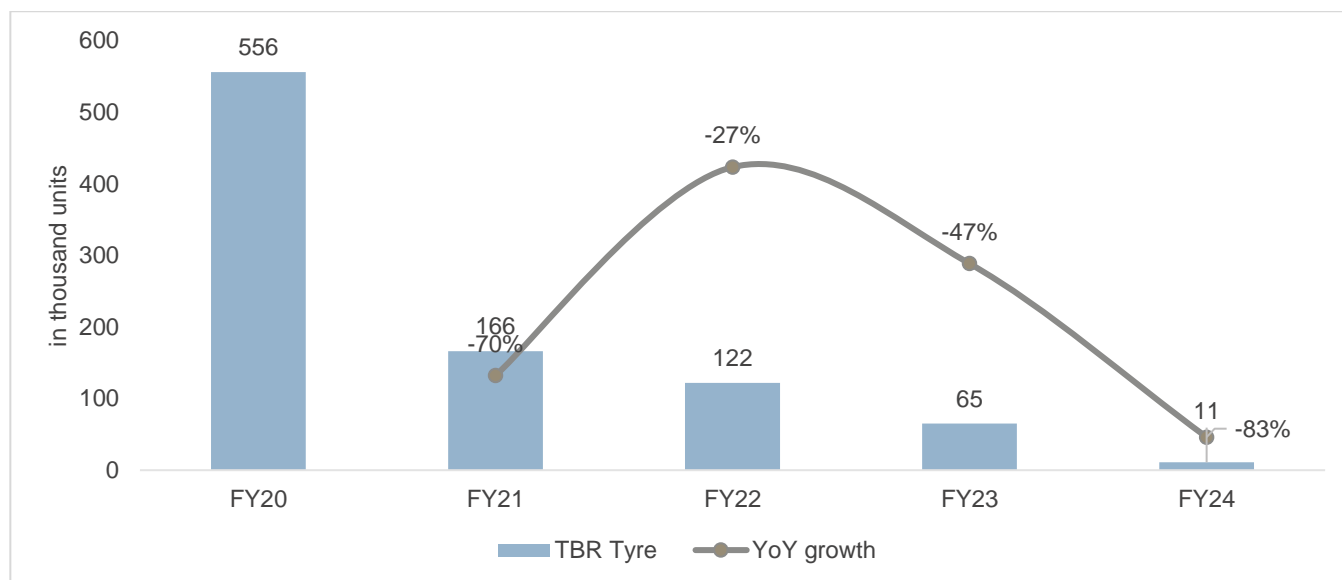
In September 2017, anti-dumping duty (ADD) to the tune of \$245.35-\$452.33 per tonne was imposed on pneumatic radial tyres above 16-inch in size, mainly affecting the truck and bus radial (TBR) and PCR segments for five years. In June 2019, countervailing duty (CVD) to the tune of 9.12-17.5% was imposed on Chinese pneumatic radial tyres above 16-inch in size for five years. Further, in June 2020, the government put tyre imports under the restricted category, which severely impacted imports, potentially benefitting domestic players in the replacement segment. Additionally, in September 2020, tyres were removed from the Duty-Free Import Authorisation list. Accordingly, share of tyre imports from China, Vietnam and Thailand declined considerably across segments, resulting in a significant dip in total imports.

PCR tyre imports continued to remain positive in the past due to demand for high-end tyres as well as imports by multinational corporations such as Michelin, Pirelli, Hankook and Falken. However, with import restrictions in place, the import of PCR tyres will remain a key monitorable soon.

Commercial vehicles

The truck and bus tyre segment continues its downward trajectory with 83% decline in tyre imports in fiscal 2024 compared to 47% decline in fiscal 2023. The rate of decline in commercial tyre imports almost doubled in fiscal 2023 due to the imposition of heavy ADD. In the TBR segment, share of imports from China reduced from 89% in fiscal 2018 to 0.7% in fiscal 2023, share of imports from Thailand and Vietnam increased from almost negligible in 2018 to 73% and 10%, respectively, in fiscal 2023.

Figure 9: TBR Tyre imports ('000 no.)

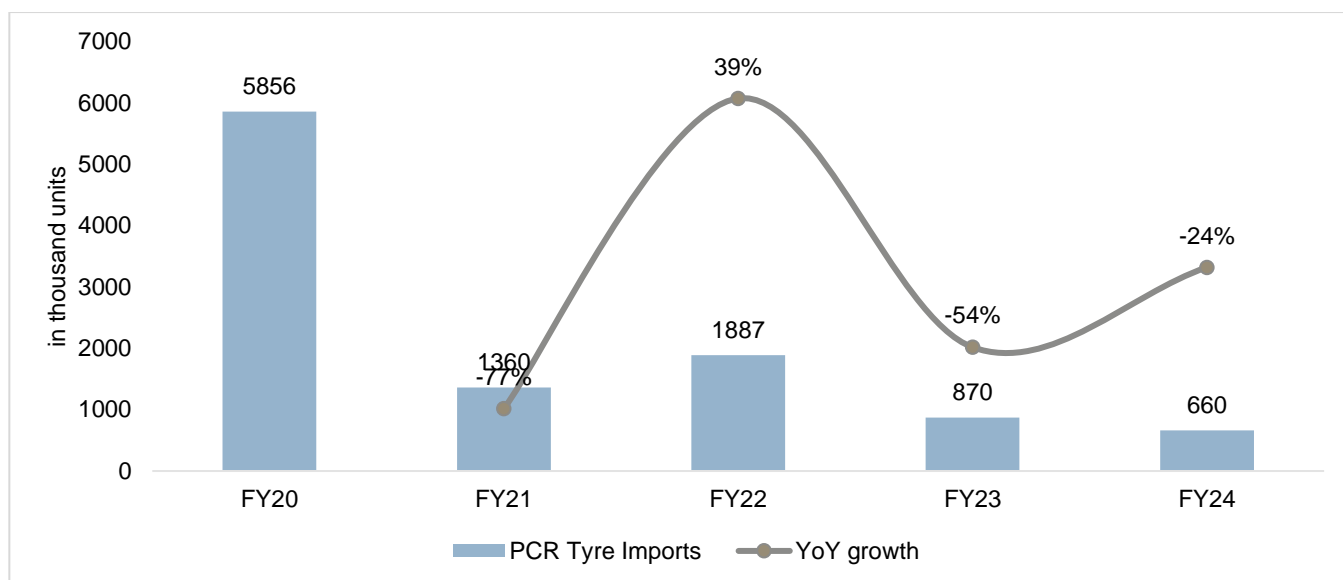


Source: DGFT, CRISIL MI&A Consulting

Passenger Car (PCR) Tyres

The passenger vehicle tyre imports declined by 24% in fiscal 2024 compared to ~54% in fiscal 2023. In fiscal 2022, it recorded an optimal growth of 39% in PCRs due to demand for cheaper tyres with a reviving economy. Thailand continues to account for the largest share in PCR tyre imports in India followed by Germany.

Figure 10: PCR tyre imports ('000 no.)

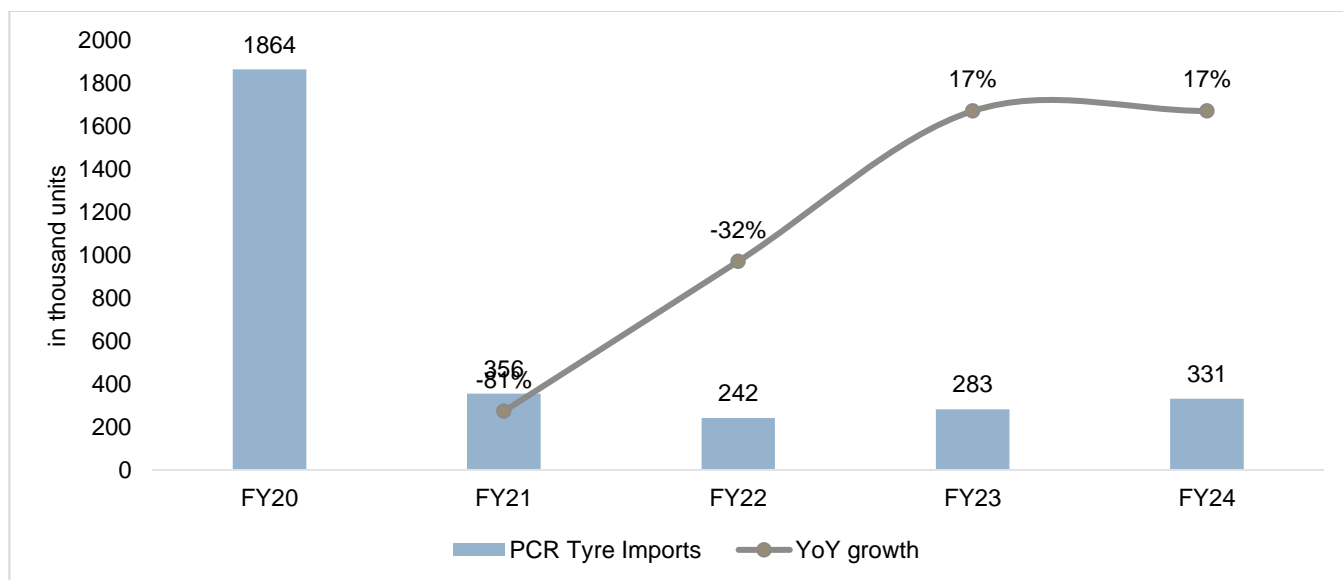


Source: DGFT, CRISIL MI&A Consulting

Motorcycle Tyres Imports

Motorcycle tyre imports remained at stable levels i.e., 17% in fiscal 2023 and fiscal 2024. Thailand continues to be the major exporter of motorcycle tyres to India followed by China.

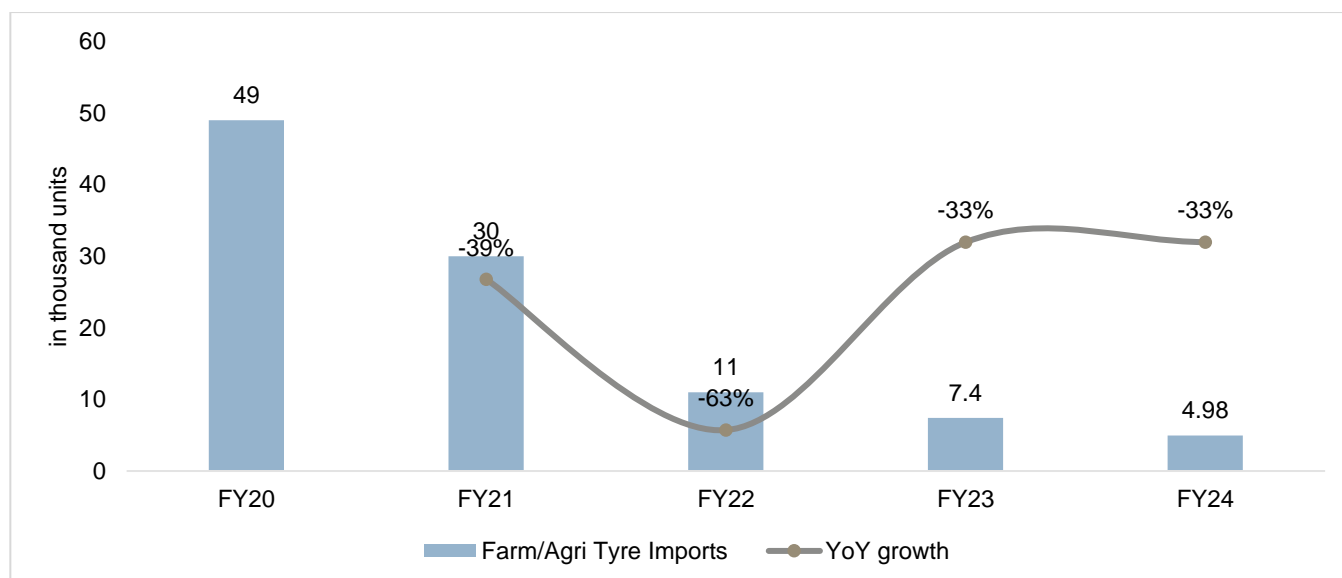
Figure 11: Motorcycle Tyre Imports ('000 no.)



Agriculture (Tractor Front, Rear & Trailer) Tyre Imports

The overall tractor tyre imports continue to witness a decline for the fifth continuous fiscal due to heavy imports restrictions. As in fiscal 2024, China continues to be the largest source of Farm/Agri tyres import in India.

Figure 12: Farm/Agri Tyre Imports ('000 no.)



Source: DGFT, CRISIL MI&A Consulting

8.4. Radialisation in tyre industry

With the improvement of road infrastructure and launch of multi-axle vehicles, the radialisation in truck & bus tyres has gained momentum, the usage of radial tyres in Heavy Commercial Vehicle segment is likely to reach 65-70% in the next few years. Presently, in LCV segment, the radialisation levels are around 40-45%.

The radialisation in passenger vehicles segment is around 99%. In 2W and 3W, more than 90% of the tyres are bias and the radialisation levels are low as compared to other segments.

8.5. Outlook for tyre industry

The domestic tyre industry is expected to expand in the coming years owing to higher demand for vehicles. The sector's planned spending is aimed at adding manufacturing capacity, modernisation, technology upgrade and research and development (R&D).

With the automobile sector growing, demand for replacement tyres is also increasing.

Moreover, increasing acceptance of Indian tyres in the overseas markets is leading to a sharp growth in tyre exports from India to destinations such as the US and Europe.

The creation of high-speed corridors and the government's infrastructure efforts will lead to an increase in the use of radial tyres. The shift towards radialisation will provide a further growth opportunity for the industry. The incorporation of Industry 4.0 and automation in the tyre industry is also expected to improve productivity and quality.

Indian tyre industry is expected to grow by 4-6% in fiscal 2025, owing to improvement in replacement demand amidst a muted growth in OEM segment. The replacement segment which covers 68% of overall tyre production by tonnage, is projected to grow 5-7% while OEM segment is projected to grow by 1-3%. The slow growth in OEM demand is attributable to the expected decline in commercial vehicle sales which account for ~50% of overall tyre sales by tonnage.

The commercial vehicle (CV) sales for fiscal year 2025 are expected to decline marginally by (2)-0%. Light Commercial vehicles (LCVs) are projected to grow by 0-2% aided by volume up for replacement, while Medium and Heavy Commercial Vehicles (MHCV) sales are projected to decline by (4)-2% on account of the high tonnage sold in MHCVs over the preceding years. Passenger vehicle sales are projected to register a moderate growth of 5-7% after recording 3 years of high sales.

Growth in the replacement sector will be majorly led by revival in rural market which is predominantly dependent on farm incomes which remained subdued in the previous fiscal owing to erratic monsoon which led to lower crop yields. However, with normal monsoon prediction and healthy reservoir levels, the tyre sales which got postponed previously are expected to materialise this fiscal. Additional factors including the ongoing healthy economic scenario, softening inflation coupled with improvement in income sentiments, improving industrial activity, along with the government's emphasis on infrastructure development, mining, and road construction is expected to boost tyre sales in fiscal 2025.

Strong presence of Indian two-wheeler OEMs in African and Latin American nations along with better brand image of Indian tyre OEMs to aid increased exports of two wheeler tyres. Slowdown in exports is expected in other segments owing to weak demand from advanced economies in Europe and America.

8.5.1. Two-wheeler tyres: Review and outlook

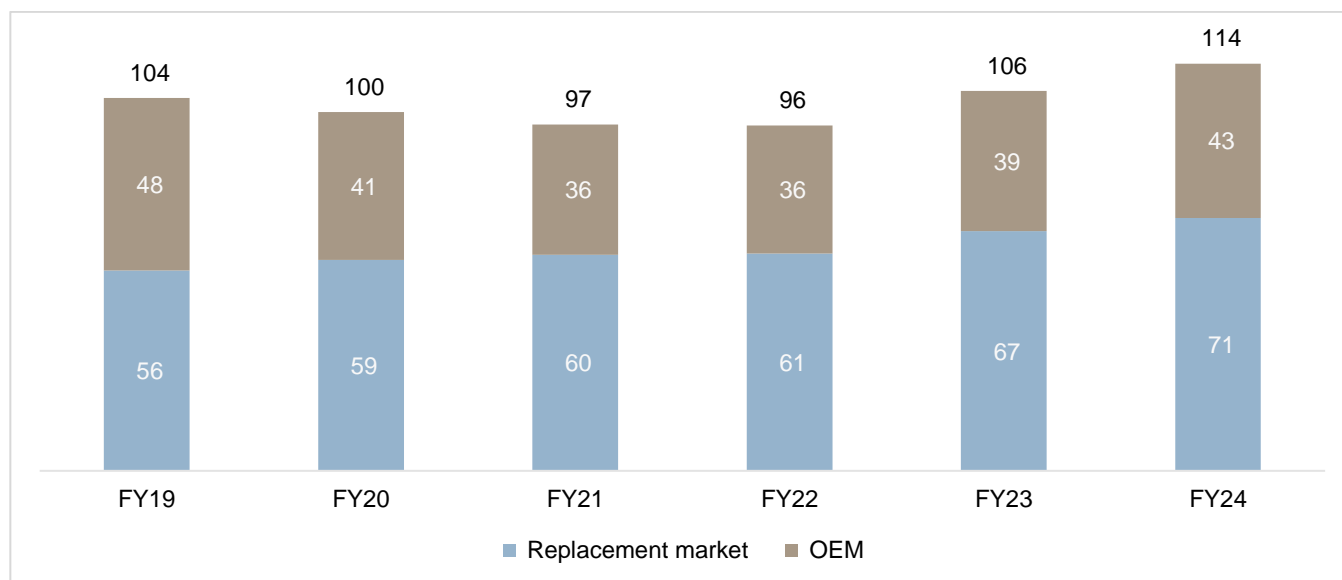
Improving urban sentiments owing to a pick-up in overall public mobility, with resumption of work-from-office and physical classes in educational institutions, and positive rural sentiment backed by an anticipated normal monsoon, are expected to support two-wheeler sales this fiscal.

New model launches in the 125cc scooter segment and premium motorcycles, along with better product positioning, are expected to drive up two-wheeler volume in the long term. Improving rural productivity, low penetration, rising affordability and the government's income support schemes and structural measures such as Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) and PMFBY are expected to aid rural income, resulting in higher two-wheeler demand in the long run.

Demand from the two-wheeler OEM segment is expected to be grow by 11-13% in fiscal 2025 amidst improving income sentiments. Volumes are expected to be driven by recovery in scooter sales as urban income sentiments improve and EV penetration increases. Normal monsoon prediction is expected to support demand for motorcycles segment positively.

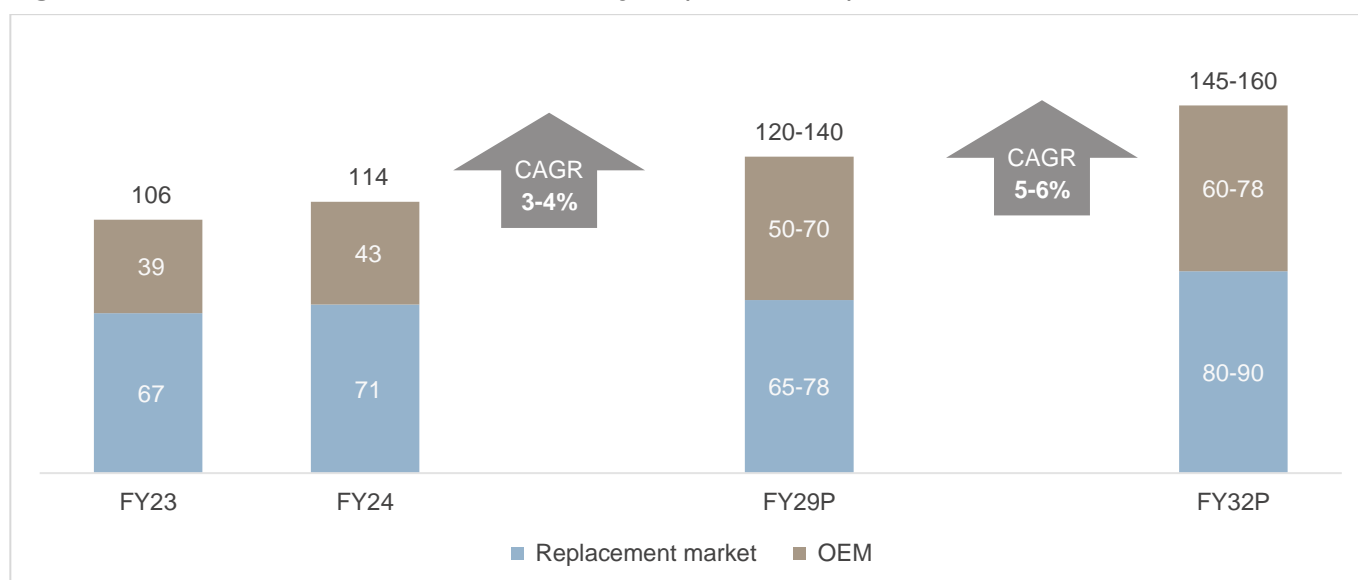
After remaining subdued during first half of fiscal 2024, replacement demand in two wheeler tyre increased after the festive season leading to an overall growth of 6%. In fiscal 2025, the segment is expected to grow by 3-5% aided by higher movement of personal vehicles, with motorcycles in rural and scooters in urban areas contributing. Further revival of rural economy is expected to support the growth of replacement tyres.

Figure 13: Two-wheeler tyre demand over fiscals 2019-2024 (million units)



Source: CRISIL MI&A Consulting

Figure 14: Outlook for demand for two-wheeler tyres (million units)

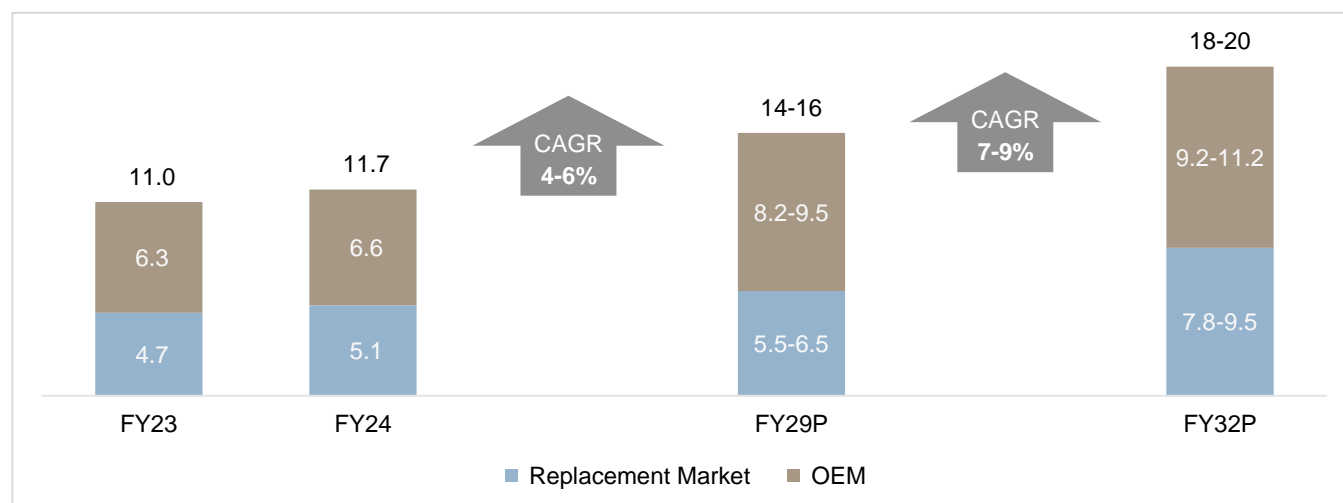


Source: CRISIL MI&A Consulting

8.5.2. Three-wheeler tyres: Review and outlook

The need for cost-effective and efficient modes of transportation remains strong, thereby driving the demand for tyres. A larger number of operational three-wheelers would result in a higher demand for replacement tyres. The government regulations related to vehicle maintenance and safety can influence the demand for replacement tyres as they are required to adhere to certain standards.

Figure 15: Outlook for three-wheeler tyre demand (million units)



Source: CRISIL MI&A Consulting

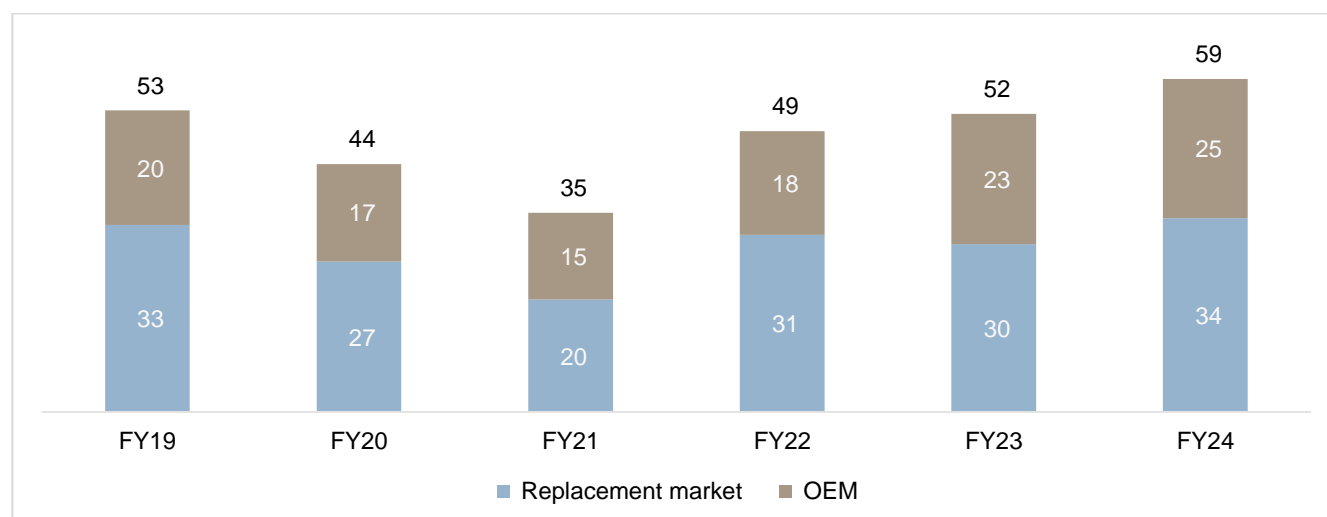
8.5.3. Passenger vehicle tyres: Review and outlook

Passenger vehicle sales are expected to be driven by the expansion in the addressable market, urbanisation, low penetration, modest increase in the cost of acquisition and fast-paced infrastructure development. We also expect automobile manufacturers to focus on rural markets and expand their distribution network in semi-urban and rural areas.

The passenger vehicle sales are projected to grow by 5-7% in fiscal 2025 over a strong base created by 3 consecutive years of healthy growth. Rise in income levels along with increase in finance penetration coupled good traction in newly launched UV models is expected to bode well for the industry.

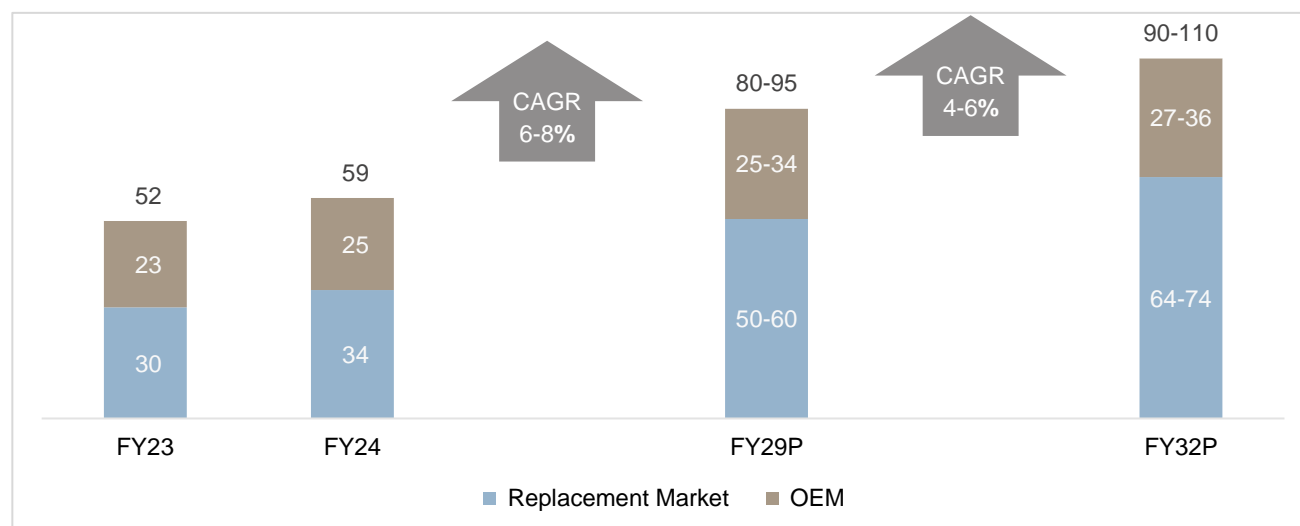
Better financial conditions, the launch of higher-end utility vehicle models by OEMs and improving demand sentiments are expected to drive 5-7% growth in fiscal 2025. Additionally, the high sales in the PV segment in fiscal 2022 are expected to result in higher tire sales in fiscals 2025 and 2026.

Figure 16: PV tyre demand over fiscals 2019-2024 (million units)



Source: CRISIL MI&A Consulting

Figure 17: Outlook for PV tyre demand (million units)



Source: CRISIL MI&A Consulting

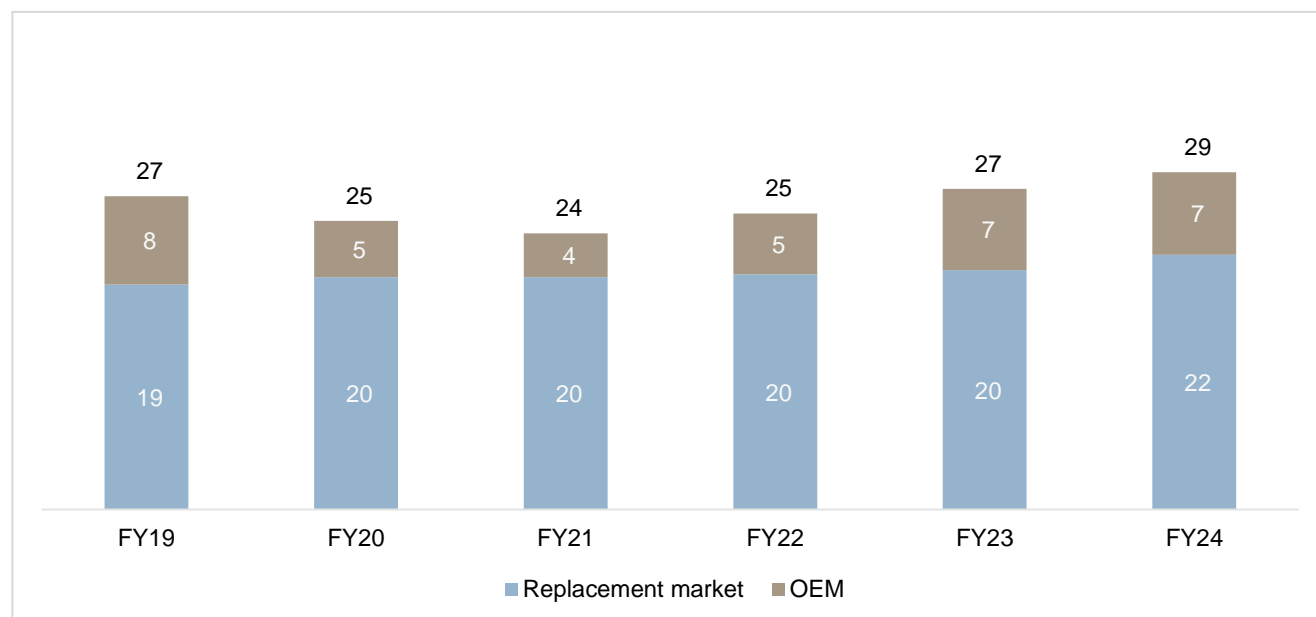
8.5.4. Commercial vehicle tyres: Review and outlook

The tyre demand from OEMs catering to the MHCV segment is projected to decline by 4-6% in fiscal 2025 due to a projected decline in the Medium and Heavy Commercial Vehicle (MHCV) sales segment by 2-4% in fiscal 2025. The projected higher decline in sales in higher tonnage vehicles is expected to lead to a larger decline in tyre sales in fiscal 2025. The decline in the volume up for replacement and the oversupply of tonnage in the system will hinder the volume growth. The higher tonnage available in the system is restricting volume growth in the current fiscal as the trend towards higher tonnage vehicles is expected to continue implying tonnage growth will be in line with GDP but volumes will be limited.

Tyre demand from OEMs catering to the LCV segment is projected to decline by 8-10% in fiscal 2025. Though overall LCV sales are estimated to grow by 0-2% due to increase in sales of LCVs and pickups by 2-4%, the ULCV segments which have higher tyre sizes is estimated to decline by 35-40% due to subdued volumes up for ULCV replacements which peaked in fiscal 2023.

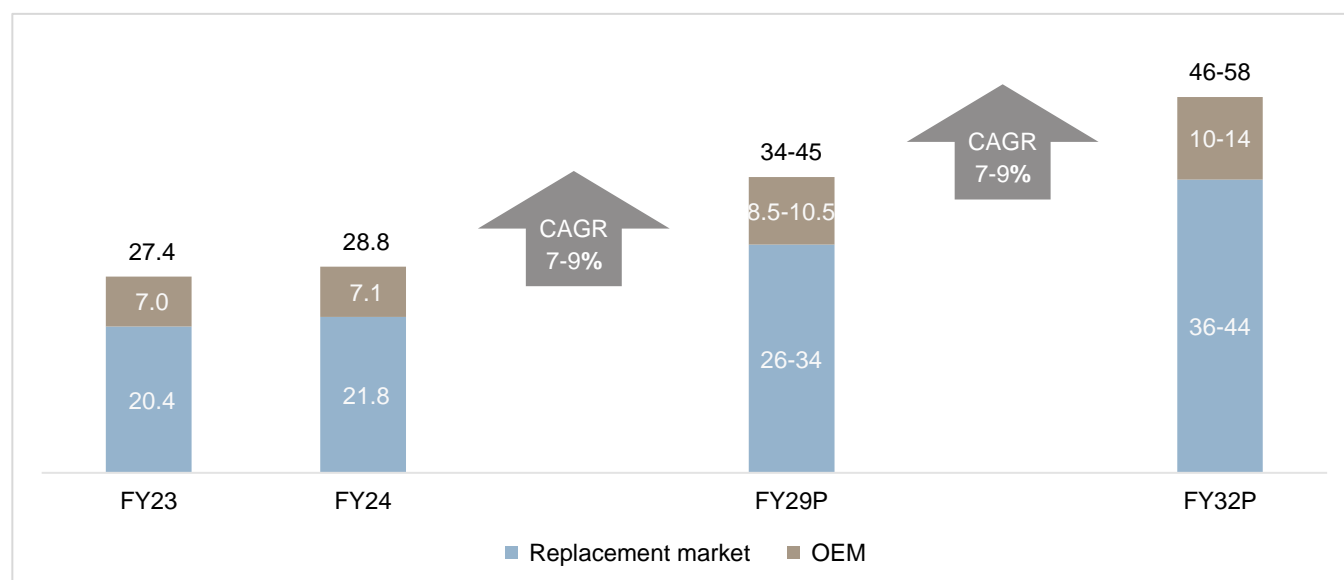
Higher government spending on infrastructure, heightened private capex coupled with revival in economic activities has led to increase usage of MHCV tyres driving overall replacement growth. Higher mining and construction activity has provided further supported the growth of replacement segment in MHCVs tyres. An increase in freight rates along with stable fuel prices is expected to improve transport profitability leading to higher fleet utilisation. The increased investment in infrastructure projects and the expansion of mining operations will contribute to the need for tyre replacements across various sectors in fiscal 2025 as well as existing tyres reach the end of their lifespan and thereby leading to a growth of 5-7% in fiscal 2025.

Figure 18: CV tyre demand over fiscals 2018-2024 (million units)



Source: CRISIL MI&A Consulting

Figure 19: Outlook for CV tyre demand (million units)



Source: CRISIL MI&A Consulting

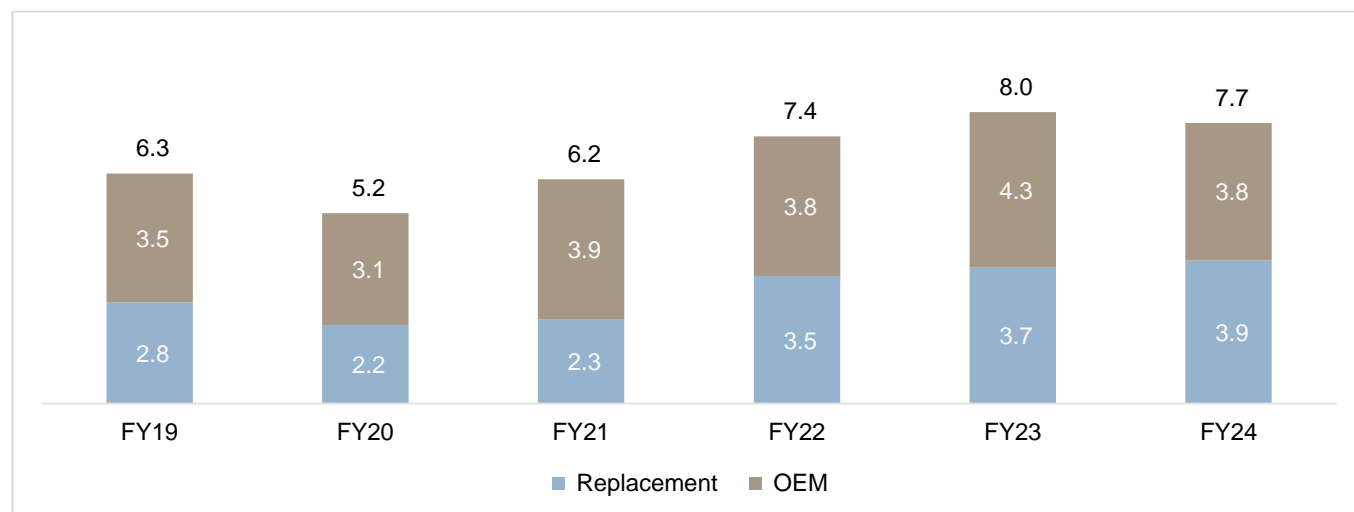
8.5.5. Tractor tyres: Review and outlook

OEM tractor tyre demand is projected to record an 3-5% growth in fiscal 2025 on account of higher tractor purchases which are estimated to grow by 4-6. Subdued rural sentiments due to erratic rainfall and high input costs have led to a decline in farmer sentiments.

Erratic rainfall conditions caused by El Niño as well as decline in farm profitability has led to a decline in replacement tyres by 5% in fiscal 2024. The unpredictable weather patterns and unfavorable agricultural conditions have constrained the need for tractor replacements in both fiscal 2024. However, with anticipation of normal

monsoon and subsequent increase in crop yield and farm profitability is expected to an increase replacement tyre demand by 4-6% in fiscal 2025.

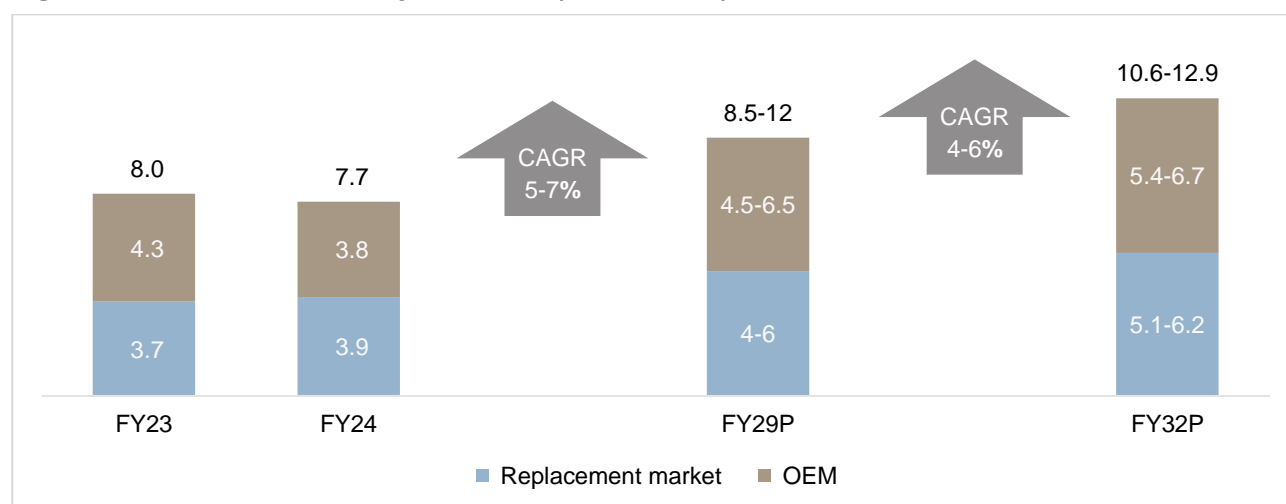
Figure 20: Tractor tyre demand over fiscals 2019-2024 (million units)



Source: CRISIL MI&A Consulting

Tyre demand from the tractor segment is expected to be stable in the long run as the government has set a target to augment farm incomes, provides direct income support to farmers and owing to improvement in land productivity through issuance of soil health cards. The government's renewed thrust on enhancing irrigation intensity is expected to support tractor growth and increase mechanisation. Tractor manufacturers have started offering rental services via mobile applications, which will also prop up demand for tractors in the long term.

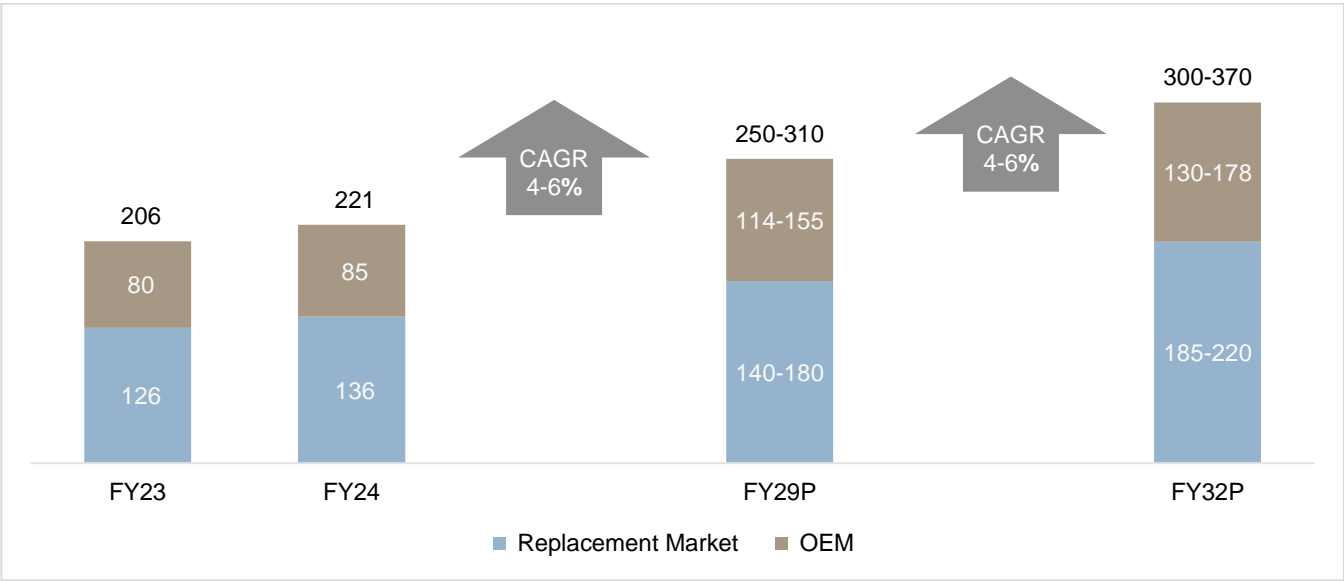
Figure 21: Outlook for tractor tyre demand (million units)



Source: CRISIL MI&A Consulting

Overall tyre demand (million units)

Figure 22: Overall tyre demand (million units)



Source: CRISIL MI&A Consulting

Note: Overall tyre demand includes 2W, 3W, PV, CV, Tractor and OTR; OTR contributes <2% of overall demand

9. Key competitors

Table 1: Competitive benchmarking of players for fiscal 2024 —

Companies	Revenue from Operations	EBITDA	PAT	EBITDA margin	PAT margin	ROCE	ROE	Debt to equity
	(Rs million)			(%)				Times
Tolins Tyres Limited	2,272.2	463.7	260.1	20.4	11.4	36.1	25.9	0.8
Indag Rubber Limited	2,511.9	165.7	155.8	6.6	6.2	4.4	6.8	
Elgi Rubber Company Limited	3,864.5	248.7	116.6	6.4	3.0	13.4	6.1	1.6
TVS Srichakra Ltd	29,260.0	2,968.1	1,077.6	10.1	3.7	11.1	9.7	0.8
GRP Limited	4,613.8	507.2	226.4	11.0	4.9	16.7	13.6	0.7
Vamshi Rubber Limited	774.2	32.5	6.1	4.2	0.8	4.7	4.5	1.4

Source: Annual reports, CRISIL MI&A

Note: Consolidated financial statements are considered for the companies.

Standalone financials considered for Vamshi Rubber Limited

Table 2: Competitive benchmarking of players for fiscal 2024 -

Companies	Revenue from Operations	EBITDA	PAT	EBITDA margin	PAT margin	ROCE	ROE	Debt to equity
	(Rs million)			(%)				Times
JK Tyre & Industries Ltd	1,50,017	20,776	8,059	13.8	5.3	19.2	17.5	1.0
Apollo Tyres Ltd	2,53,777	44,477	17,218	17.5	6.7	14.5	12.4	0.3
CEAT Ltd	1,19,434	16,730	6,352	14.0	5.3	15.2	15.7	0.4
MRF Ltd	2,51,692	42,535	20,812	16.9	8.2	14.8	12.4	0.1

Source: Annual reports, CRISIL MI&A; Consolidated financial statements are considered for the companies

Note:

Revenue from operations is calculated as revenue from sale of products

EBITDA means EBITDA is calculated as profit before tax, extraordinary and exceptional items plus finance costs, depreciation and amortisation expense minus other income.

EBITDA margin is calculated as a percentage of EBITDA divided by revenue from operations

PAT represents total profit for the year/period

PAT margin is calculated as a percentage of PAT divided by revenue from operations

ROE is calculated as a percentage of PAT divided by Total Equity at the end of the year /period, whereas Total equity is calculated as sum of equity share capital, other equity, Instrument entirely in the nature of equity, net of non-controlling interest. ROCE is calculated as a percentage of Earnings before interest and Taxes / Total Assets minus current liabilities. EBIT is calculated as profit before tax plus Interest expense minus other income minus other borrowing cost such as bank charges on loans (if any).

Debt-Equity Ratio is calculated as Total Borrowing is divided by Total Equity.

9.1. Brief profiles of key players

Tolins Tyres

Tolins Tyres Private Limited was incorporated on 10th July 2003. The company is successfully managed by Dr. Kalamparambil Varkey Tolin. The family started operations initially as an SSI unit in 1982 as proprietorship manufacturing tread rubber concern. Tolins Tyres is one of the leading players in the industry with all India presence with a diverse product range. Tolins Tyres is one of the companies that are present in both verticals –

manufacturing of new tyres and tread rubber. The company has established itself as a major tyre retreading solutions provider across India and exported to 40 foreign countries, including the Middle East, East Africa, Jordan, Kenya and Egypt. The major products of the company include two-wheeler, three-wheelers, light commercial vehicle and agricultural tyres, precured tread rubber and other accessories including bonding gum, tyre flap, vulcanizing solutions, etc.

Indag Rubber

Indag Rubber was incorporated in July 1978 as a joint venture between the Khemka Group and M/s Bandag Incorporated, USA, one of the biggest players in the US retreading industry. The company is promoted by Nand Khemka. It uses cold cure technique to manufacture retreading material. It provides retreading material ranging from precured tread rubber, unvulcanised rubber strip gum, universal spray cement and tyre envelopes for the tyre retreading segment. Its manufacturing facility is at Nalagarh, Himachal Pradesh.

ELGI Rubber Company (ELGI)

ELGI was incorporated in October 2006 under the name of ELGI Aviation Tyres Ltd and was renamed as ELGI effective 7 April 2011. ELGI manufactures reclaim rubber, tread rubber, bonding gum and other rubber products used in the rubber industry, predominantly in the tyre sector. It also provides retreading services through a franchisee network. ELGI has nine manufacturing units spread across Tamil Nadu and Kerala. The company has seven wholly owned subsidiaries and five retreading units. It is headquartered in India and has subsidiaries in Australia, Brazil, Kenya, the Netherlands, Sri Lanka and the United States. The company is listed on the National Stock Exchange (NSE). ELGI's products are sold under the brands Jet, Pincott, Carbrasive, Midwest Rubber, CRS, Armonas, Western Weld, Kooltread and Ecorr.

TVS Srichakra Ltd

Incorporated in June 2nd, 1982, Srichakra Tyres (STL) was promoted by R Naresh, T V Sundram Iyengar & Sons Pvt. Ltd. and Sundaram Industries Pvt. Ltd. The company was renamed as TVS Srichakra Tyres Limited on Oct 1997. The company manufactures two-wheeler, three-wheeler and other industrial tyres. The Company has 3 subsidiaries, TVS Srichakra Investments Limited (TSIL), TVS Sensing Solutions Private Limited (formerly known as ZF Electronics TVS India Private Limited) - subsidiary of TSIL and Fiber Optic Sensing Solutions Pvt Ltd(subsidiary of TSSPL). It manufactures tyres in two manufacturing sites: one in Tamil Nadu and the second in Uttarakhand. In August 2019, the company has launched the Brand TVS Eurogrip targeted at meeting the needs of the millennial customers. TVS Eurogrip is born out of extensive consumer research and significant investments in global R&D, design and technology platforms.

GRP Limited

GRP Ltd., established in 1974, is among the most recognised manufacturer of reclaimed rubber from used tyres, upscaled polyamide from nylon waste and engineered products die-cut from end-of-life tyres. The company operates 5 business verticals (Reclaim Rubber, Engineering Plastics, Repurposed Polyolefins, Polymer Composite & Custom Die Forms) with 7 manufacturing units across India with an installed capacity to handle 81,200 MT per annum. The Company is engaged in producing reclaim rubber from scrap of whole tyres, tread peelings, natural rubber tubes, butyl tubes, moulded rubber products for different applications in both, tyre and non tyre rubber products. It is having their manufacturing units located at Solapur in Maharashtra, Ankleshwar and Panoli in

Gujarat. The Company operates 4 business verticals viz., Reclaim Rubber, Industrial Polymers, Custom Die Forms & Polymer Composite. In 2010, the Company diversified into Industrial Polymers.

Vamshi Rubber Limited

Vamshi Rubber Limited was established in 1993 in collaboration with Hercules Tire & Rubber Co., USA. The Company is one of the major suppliers of tire retreading material offering appropriate solutions to suit Global Standards. Presently, it is manufacturing Precured Tread Rubber, Cushion Gum & Vulcanizing Solution, which are used in retreading of worn-out tires. The state-of-the-art manufacturing unit is located near Hyderabad, in a sprawling 4-acre estate, with spacious industrial sheds equipped with all Critical Machinery to manufacture 3200 MT of Precured Tread Rubber, 400MT of cushion Gum and 400KL of Vulcanizing Solution annually.

JK Tyre and Industries Limited

JKTI, the flagship company of the JK group, is headed by Dr R P Singhania as its chairman and managing director. It is one of the leading tyre manufacturers in India with a wide range of products catering to diverse business segments including, truck/bus, light commercial vehicles (LCV), passenger cars, multi-utility vehicles (MUV), tractors and one of the few companies to have a multi-tier product approach. It has grown to be one of the largest manufacturers of PCT in India as of fiscal 2023 and is also one of the few Indian companies to have developed PCR tyre with high sustainable, recycled and renewable material. JK Tyre, in April 2016, acquired Cavendish Industries Limited in Haridwar, UKD. Cavendish Industries Limited is one of the leading manufacturers of branded two and three-wheeler tyres in terms of revenue from operations as of fiscal 2023.

JK Tyre has a significant global presence and is present in around 100 countries with over 230 Global distributors. The Company has 12 globally-benchmarked 'sustainable' manufacturing facilities - 9 in India and 3 in Mexico – that collectively has manufacturing capacity of around 34 million tyres annually. The Company also has a strong network of over 6000 dealers and 700 dedicated Brand shops called as Steel Wheels and Xpress Wheels.

Apollo Tyres Limited

Apollo, established in 1972, manufactures automotive bias and radial tyres, and tubes. It has plants in Kochi (Kerala), Vadodara (Gujarat), Pune (Maharashtra), Chennai (Tamil Nadu) and Chittoor (Andhra Pradesh). The product profile includes prominent tyre brands in the two-wheeler, truck and bus, light truck, passenger vehicle and farm vehicle segments in India, catering to both original equipment manufacturers and the replacement market. Apollo tyres is present in 100+ countries and has 7 manufacturing facilities across India and Europe. The company has 2 global R&D centres. In May 2009, Apollo acquired Vredestein, a subsidiary of Amtel-Vredestein NV, incorporated in the Netherlands, for EUR 40 million. Vredestein has one manufacturing unit in Enschede near Amsterdam, with capacity of 55 lakh tyre per annum. It produces premium, high-speed PCRs, collapsible passenger car tyres, and agricultural tyres.

CEAT Ltd

Established in 1958, CEAT is flagship entity under the RPG group (Rama Prasad Goenka Group) which acquired the company in 1982. CEAT is engaged in the manufacturing of tyres, tubes and flaps and it is one of the leading

tyre manufacturers in the domestic market. The product profile includes tyres for scooter, bike, 3-wheeler, car, bus, LCV, trucks, and tractors. They have a presence in more than 110+ countries, It caters to demand from both OEMs and replacement market. In India, CEAT operates with six manufacturing units located at Bhandup, Nagpur, Nasik, Ambarnath (Maharashtra), Halol (Gujarat), Chennai (Tamil Nadu). Further, they have 17 outsourcing units to manufacture tyres, tubes and flaps.

MRF Limited

MRF Ltd (MRF), was incorporated as a private limited company in 1960 to take over the business of a partnership firm 'The Madras Rubber Factory', started by the late K M Mammen Mapillai. Over the years, the company has established a country-wide dealer network. MRF has manufacturing plants spread across nine locations in Tamil Nadu, Kerala, Andhra Pradesh, Gujarat and Goa. It also has strong R&D support and a marketing team with a wide distribution network. Other business operations of the company consist of manufacturing pre-cured treads, tread rubber, specialty paints, etc.

10. Overview of the treads industry in India

10.1. Treads industry in India

The treads industry in India is a thriving sector that caters to the growing demand for tyres in the country. Driven by factors such as increasing vehicle ownership, improvement in road infrastructure and rising disposable income, the industry is expected to witness steady growth in the coming years.

In addition to the major players, there are several small and medium-sized enterprises (SMEs) that operate in the industry. These SMEs play a vital role in meeting the demand for specialised treads and cater to niche markets.

10.2. Key growth drivers in India

In the Indian retreading industry, several important parameters contribute to the growth:

- **Cost efficiency:** Retreading tyres are more cost-effective than buying new ones, which helps reduce operating expenses of commercial vehicle operators
- **Technological advancements:** Technological and procedural developments in retreading have enhanced the longevity and functionality of retreaded tyres, increasing their consumer appeal
- **Environmental awareness:** Retreading is a sustainable practice, as it helps reduce the environmental impact of tyre disposal and the need for new tyre production
- **Government regulations:** The expansion of the retreading sector can be fuelled by laws such as ELT (Extended Life of Tyres) which place limitations on the disposal of old tyres
- **Collaboration with tyre manufacturers:** Partnerships between retreaders and tyre manufacturers can lead to the development of high-quality retreaded tyres
- **Expansion of commercial vehicle fleet:** Retreaded tyres are mostly used by commercial vehicles, which are prevalent in India and contribute to the expansion of the business
- **Infrastructure development:** Tyre longevity can be increased and the need for retreading services can rise with improved road infrastructure

Trends

The Indian treads market is anticipated to expand over the next few years. There is an increasing need for treads that can offer better handling and grip. Tyre manufacturers are using new materials, such as silica and nanocomposites, to develop treads that are more durable and fuel-efficient. With growing focus on sustainability, tyre manufacturers are developing treads that are more environmentally friendly and recyclable.

10.3. Retreading

Retreading is the process of replacing the worn tread on a tyre with a new one. This can be done multiple times, depending on the condition of the tyre casing. Retreading is a more cost-effective and sustainable option than purchasing a new tyre.

The following are the main retreading trends in India across all vehicle segments:

- **Commercial vehicles:** In India, buses and trucks that are used for business purposes are the main consumers of retreaded tyres. This is because retreading significantly reduces tyre costs for fleet operators
- **Passenger vehicles:** Retreading is also gaining popularity in India among drivers of passenger vehicles. This is brought on by the rising price of new tyres and the growing understanding of the advantages of retreading for the environment

Functionality of Bias tyres and retread tyres

Due to their simpler construction, bias tyres are typically less expensive to manufacture than radial tyres. This makes them a budget-friendly option for certain applications. The strong sidewalls of bias tyres allow them to handle heavier loads compared to radial tyres of the same size. This is why they are often used in trucks, trailers, and agricultural equipment. The flexible carcasses and construction provide better grip on loose surfaces like sand, mud, and gravel. This makes them popular for off-road vehicles and agricultural equipment. The strong sidewalls offer increased resistance to punctures and sidewall damage, making bias tyres suitable for applications where road hazards are common.

Retreads extend the usable life of a tyre by replacing the worn-out tread with a new layer of rubber. This can significantly reduce the need for new tyre purchases. Retread tyres are typically much cheaper than new tyres, making them an attractive option for cost-conscious businesses and individuals. Retreads are often used for specific applications where durability and load capacity are paramount, such as in trucks, buses, and agricultural vehicles.

Materials used in retreading

Bonding gum

Bonding gum is an adhesive applied as a layer on the casing before the new tread is attached. It ensures a strong bond between the casing and the new tread rubber. Made from superior polymer formulated with technology, it increases the tackiness and offers better shell life.

Vulcanising solution

Vulcanising solution is a liquid that acts as glue, chemically bonding the various rubber components together during the curing process. It is available in different curing temperatures, which ensures high adhesive strength and long-lasting durability. Vulcanising agents, such as sulphur, are used in the curing process to chemically bond the rubber materials together and give the retreaded tire its final form and properties.

Rope rubber

It is the material used for patching or plugging punctures and damages in tires. It can be used in both hot and cold retreading as well as in repairs to fill up the injured area.

Process of retreading

There are four important steps in retreading of tyres:

- **Inspection:** Carefully inspected worn-out tyres (known as casings) are used for retreading
- **Buffing:** The process of shaving off the worn-out tread from the tyre. Tyre buffing is the technique of cutting a piece of the tread off a tyre to improve traction on dry roads. This primarily works by reducing tread 'blocks', which are patches of rubber between tread grooves. When the tyre heats up, these tread blocks expand, reducing the surface area of the tyre that contacts the road (and, in turn, traction). Tread blocks also heat up faster, reducing traction

- **Re-capping:** New tread is wrapped and bonded around the freshly buffed surface using heat and pressure with computer-aided quality inspection to ensure high performance
- **Quality control:** Following re-capping, quality control tests ensure the tyre's performance, dependability and grip on the road

Classification

Retreaders can be classified into two categories:

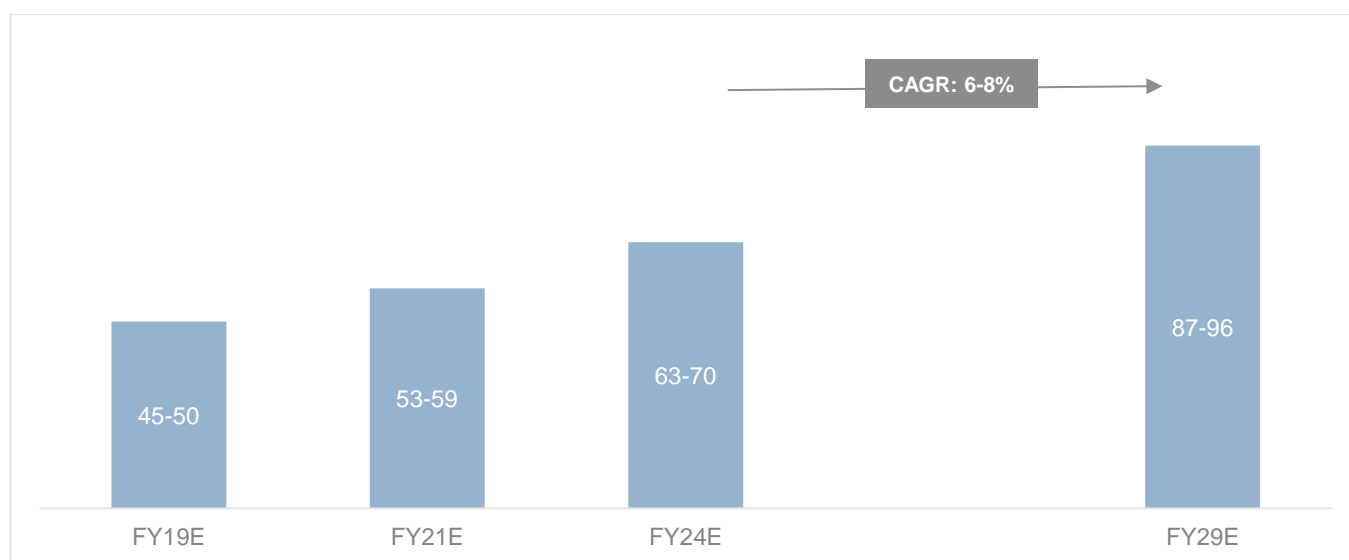
- **Factories with organised process:** When it comes to serviceability of tyres, organised retread process stand out for better mileage
- **Small plants with unorganised process:** Although service offered in this instance would be reasonably priced, the reliability of the retreaded tyre would be a problem. Transporters with small and medium-sized fleets frequently use an unorganised retreading method to reduce expenses

Advantages

Some of the notable advantages of retreading of tyres are:

- **Low investment and long lasting:** Retreading is more affordable alternative to buying new tyres. Retreaded tyres cost 30-40% less than new ones and provide comparable efficiency and performance
- **Safety:** Retreaded tyres have stringent performance testing criteria to ensure same safety standards as new tyres and that it is not compromised by any means
- **Environment friendly:** Tyre retreading entails changing the tyre's top layer of rubber that is worn out. In a new tyre, 60-70% of the materials are recycled. Saving majority of the casing materials and only replacing the rubber keeps those additional tyre materials out of landfills, reusing them instead of disposing of them when purchasing newly manufactured tyres

Figure 23: Market size of retreading industry in India in revenue terms (Rs billion)



Source: CRISIL MI&A

Note: Categories considered in the estimation of market size include trucks and buses, tractors, tillers and STUs;

Note: Above market sizing of retreading industry in India includes vulcanising and bonding gums as well; Market sizing separately for vulcanisation in India is unavailable.

Over the past 25 years, the retreading business in India has undergone significant changes. Beginning with the conventional hot-cure method, the market evolved embracing the precure retread method and establishing the standard for the initial wave of modernisation.

Majority of the Indian retreading industry is still unorganised. With the advent of the established players, the industry has seen advancements in R&D which resulted in the introduction of new tread compounds and bonding materials. The new materials have improved the performance and durability of retreaded tyres.

Retreaders have adopted modern quality control procedures, such as statistical process control and failure analysis, which has helped reduce the number of defects in retreaded tyres. The growing awareness about the benefits of retreading, such as cost savings and environmental benefits, is boosting demand for retreaded tyres.

Thus, with a strong backing of technology-oriented processes and increase in arrival of new and established players, the domestic retreading industry is estimated to be valued about Rs 6,300-7,000 crore as of fiscal 2024. It is expected to increase to Rs 8,700-9,600 crore by fiscal 2029 at a CAGR of 6-8% between these fiscals, majorly supported by increasing customer awareness about the benefits of retreading.

11. Threats and Challenges

1.1 Demand side challenges

Slowdown in economic activities impacting buying decision

India's GDP growth is projected to be 6.8% for fiscal 2025 and is expected to grow at a CAGR of 6% to 8% between fiscals 2024 and fiscal 2029. Any moderation to GDP growth may have an impact on the incomes of people at large and hence the decision to buy tyres or retreading.

Above or below normal monsoons

Within the economic spectrum, tractor, two-wheeler and commercial vehicle industry is very closely linked to the output of the Agricultural, manufacturing and construction sectors. While the Agricultural sector has a direct dependence on the normalcy of monsoon, the manufacturing and construction sector too, is indirectly impacted by monsoon performance both on demand as well as supply side across various sub-segments on manufacturing.

We have considered a normal monsoon scenario while forecasting domestic sales for fiscal 2025 as well as forecast till fiscal 2029. If rains are not normal and there is a scenario like El Nino or La Nina, then farm activities and farming output could be impacted which could adversely affect farm related incomes, rural sentiments, food prices and thereby inflation which in turn can affect both OEM/Replacement tyre demand and tread rubber demand for two-wheelers, tractors, passenger vehicles, three-wheelers and commercial vehicles.

Impact of changing interest rates scenario

A sustained high level of inflation could lead to rate hikes by the central bank thereby impacting interest rates. The transmission of past rate hikes by the Monetary Policy Committee (MPC) have largely played out amid tight liquidity conditions. There could be a further rise in market lending rates in the near term on account of many other macroeconomic conditions thereby leading to an increase in lending rates impacting on the cost of purchase. This along with regulatory measures to clamp down risky lending by NBFCs could moderate vehicle demand in fiscal 2025 which could impact the OEM tyre demand.

Increase in vehicle cost of ownership

A vehicle's cost of ownership is determined by its cost of acquisition and cost of operations, and both have a significant impact on the demand. The cost of vehicle acquisition rises when OEMs transfer the impact of increased manufacturing costs to the customers. In the past, the industry has seen price hikes owing to several reasons like emission norms implementation, increase in raw material prices and general inflationary hikes. These are also likely to push vehicle prices upwards going forward. Auto finance rates are also pivotal in determining affordability.

The cost of operations for a customer is directly impacted by fluctuations in crude oil prices and INR USD exchange rates, that cause rise in fuel import costs and overall fuel prices. Geopolitical issues like the Russia-Ukraine war, the war in Israel etc. could also impact fuel prices thereby impacting the raw material cost for rubber and tyre manufacturing.

Increase in traffic density on account of increasing congestion

Increasing traffic congestion on roads especially in urban centers is leading to longer transit times, which is also causing a rise in air pollution due to excessive burning of fuel. This problem is leading to more and more people preferring to use public modes of transport, and is also driving the growth of public transport systems like the metro, e-buses, ride hailing etc. The traffic congestion is expected to rise further owing to rapid urbanization, which could lead to customers deferring personal vehicle purchases and tyre replacement going forward.

Price escalations on account of regulatory push

Based on European emission standards, the Indian government has introduced the Bharat Stage (BS) norms, which are being implemented in a phased manner in the country. For the BS-VI stage 2 norms, applicable from fiscal 2024, companies have invested in the relevant technology, research, and development, and signed joint ventures (JVs) with global players. These norms have resulted in price hike for vehicles across segments owing to the introduction of new technologies to meet new emission regulations. Going forward, new emission norms are likely to be announced, which could potentially raise vehicle prices as well and impact the demand.

Inherent cyclicity of the domestic 2W and PV business

The two-wheeler and passenger vehicle industry has close linkages with growth in GDP as well as business cycles impacting incomes of probable customers thereby making the industry susceptible/vulnerable to these changes. This cyclical nature of the two-wheeler and passenger vehicle industry poses constant challenges to the industry players and tyre players as they have to constantly manage inventory optimally and profitably.

Inherent cyclicity of Commercial vehicle segment

The demand for commercial vehicles is closely tied to economic growth. During periods of robust economic expansion, there is an increase in industrial output, infrastructure projects, and logistics activities, driving higher demand for commercial vehicles. Conversely, during economic slowdowns, demand plummets as businesses reduce capital expenditures and transportation needs decline. For instance, the CV industry has seen 3 business cycles in the past 2 decades:

- FY04 to FY09 (peak in FY08)
- FY 09 to FY15 (peak in FY12)
- FY15 to FY21 (peak in FY19)
- FY21 to ongoing

It has been seen that there can a swing of more than 20-25% between the peaks and troughs of the business cycles of the CV Industry which in turn can makes business planning complicated for players involved in supply of new tyre, tread rubber to the commercial vehicle Industry and retreading.

Competitive pricing for tread rubber and retreading from unorganized players

Many customers, especially in the retreading market, are highly price-sensitive and prioritize affordability over other factors like quality or brand. Unorganized players in tread rubber and retreading often operate with less oversight and may not comply with the same safety, quality, or environmental regulations as established manufacturers. This allows them to cut costs, leading to lower prices. Unorganized units often have lower overhead costs, such as rent, labor, and infrastructure, which gives them an advantage in pricing. Organized players struggle to compete on price alone, potentially losing market share to unorganized competitors in the tread rubber and retreading space. Consumers may be unaware of the potential differences in quality and performance between tread rubber from organized and unorganized manufacturers, leading to price-based decisions that may not reflect true value.

Commoditisation of tread rubber

Tread rubber is often viewed as a commodity product, with customers focusing primarily on price and basic performance characteristics. Many manufacturers offer similar tread rubber products, making it difficult to stand out based on features or benefits. It's challenging to create a unique selling proposition (USP) that commands a higher price in a market where price is the primary driver of purchase decisions.

1.2 Supply side challenges

Raw Material Availability and Cost

- **Cost management:** The prices of key raw materials like natural rubber, synthetic rubber, carbon black, and steel are highly volatile, making it difficult for tyre and tread rubber manufacturers to plan their production costs. Prices for natural rubber are highly volatile, influenced by factors like weather patterns, disease outbreaks, and geopolitical events. Synthetic rubber production is heavily dependent on petroleum feedstock, making it vulnerable to fluctuations in oil prices and availability. A critical ingredient in tyre compounds, carbon black prices are affected by energy costs, demand from other industries, and environmental regulations. Steel prices are impacted by global demand, energy costs, and government policies. Changes in exchange rates can impact the cost of imported raw materials, particularly for companies that source materials from outside their home countries.
- **Supply chain disruptions:** Drought, floods, and disease outbreaks can significantly affect rubber tree yields, leading to supply shortages and price spikes. Growing demand for natural rubber from other industries, such as medical gloves and adhesives, can put pressure on supply. Global inflation, rising energy costs, and supply chain disruptions can contribute to increasing raw material prices. Volatile raw material prices can also lead to supply chain disruptions if suppliers are unable to secure consistent and affordable supplies. This inconsistency can result in production delays and missed deadlines, damaging relationships with OEMs and other key clients.

The tread rubber industry depends on a reliable supply of both natural and synthetic rubber, subject to the same price and availability challenges as the tyre industry.

For instance, the outbreak of the Russia-Ukraine war sent the commodities market into a frenzy, as regions that sourced materials from these countries went into panic mode, with surge in input costs for rubber and steel products. The surge in export realizations sent domestic prices on a rally as well, thus impacting procurement prices for domestic consumption.

Furthermore, the conflict of Gaza and Israel could escalate further into the wider region, which produces about 35% of the world's oil export and 14% of gas exports, which in turn can have a wider impact on commodity prices and inflation which can impact manufacturing costs.

Skilled Labor Shortage

Skilled labor is one of the most important supply side aspects in the manufacturing sector. Training and retaining skilled workers in areas such as raw material handling and preparation, mixing rubber, carbon black, and other ingredients to create the tyre compound, operating tire building machines, precision assembly, visual inspection, curing the tire to its final shape and dimension, inspecting for defects, and applying final finishing touches ensuring quality standards and troubleshooting machinery issues is a key driving factor for success of the Industry including tyre and tread rubber manufacturing.

Thus, inadequate availability of skilled labor can be one of the significant challenges impacting the work process of raw material preparation, mixing & compounding, tyre building and quality control for these industries in India. This shortage can span across various facets, from production to maintenance and innovation, ultimately affecting the industry's growth and global competitiveness.

- **Nature of the shortage:** The tyre and tread rubber manufacturing sector require a workforce proficient in forklift operation, material handling, weighing and blending, safety procedures and operating various machines. The gap between demand and supply of such skilled labor is a monitorable for the success of the industry going forward
- **Educational and Training Gaps:** The Indian education system and vocational training programs often lag in providing industry-relevant skills. Engineering graduates and technical diploma holders frequently lack hands-on experience with advanced machinery and technologies used in manufacturing of tread rubber and tyres.
- **Attrition and Retention Issues:** Skilled workers tend to migrate to sectors offering better compensation and working conditions, such as IT or international opportunities. The high attrition rates further exacerbate the skill shortage within the industrial sector.
- **Demographic and Geographic Disparities:** There can be a geographical mismatch in the availability of skilled labor. Industrial hubs may struggle to attract talent from regions with a higher concentration of educational institutions due to relocation issues and urban-rural divide.

Technological Obsolescence

Technological obsolescence refers to the phase-out of technologies as newer, more efficient, and advanced technologies emerge. In India's manufacturing sector, technological obsolescence can be a potential challenge, affecting competitiveness, productivity, and innovation capacity.

Traditional processes often involve manual labor and older machinery, which can result in longer production times and higher labor costs. In contrast, the industry is adopting automation and robotics to enhance productivity, reduce labor costs, and improve manufacturing precision, leading to the obsolescence of older, manual processes. Robots are being implemented for tasks like tyre building, material handling, and quality control, increasing efficiency, precision, and consistency. Advanced lasers are used for precise cutting and welding of tyre components, improving accuracy, reducing waste, and enhancing quality. Technologies are being developed to create tyres that can automatically seal punctures, improving safety and reducing the need for roadside repairs. Sophisticated software and simulation tools are used to design tread patterns that optimize traction, wear resistance, noise reduction, and fuel efficiency.

Tyre manufacturers are also increasingly incorporating recycled materials and bio-based materials to reduce their environmental footprint. New manufacturing processes and equipment are being developed to optimize energy use and reduce carbon emissions. Technologies are being implemented to minimize waste and improve recycling processes, creating a more circular economy.

1.3 Policy and Regulatory challenges

Changes in tax and duties regime

Changes in duties and tax structures present significant threats to the tyre and tread rubber industry. These changes can have multifaceted impacts on cost structures, supply chains, and overall competitiveness.

This threat is particularly significant due to India's evolving tax landscape and the government's periodic adjustments to import duties and other taxes.

For instance, the initial phase of GST implementation saw significant disruption. Many businesses faced challenges adapting to the new tax structure, leading to temporary slowdowns in the manufacturing value chain.

The Indian government periodically revises import duties on raw materials such as steel which are essential. Increased costs due to higher import duties are often difficult to pass on to customers, especially in a highly competitive market. This squeeze on profit margins forces manufacturers to absorb the additional costs, potentially reducing their financial health and capacity to invest in new technologies or expansion.

Hence, changes in duty and tax structures across the automotive value chain pose significant threats by increasing costs, complicating compliance, and creating market instability.

Environmental Regulations

Environmental regulations present a significant challenge for the tyre and tread rubber Industry in India, impacting manufacturing processes, costs, and compliance requirements. These regulations aim to mitigate environmental degradation and ensure sustainable industrial practices, but they also introduce complexities for manufacturers such as:

- **Stringent Emission Standards:** India has implemented several stringent emission standards that directly affect industrial operations. For instance, the Ministry of Environment, Forest and Climate Change (MoEFCC) has established norms for emissions from industrial plants. The MoEFCC sets effluent discharge standards for industries, requiring companies to treat wastewater before discharge. Industries are required to adhere to standards for pollutants such as particulate matter, sulfur dioxide, and nitrogen oxides. Failure to comply with these regulations can result in heavy fines and even plant shutdowns. Central and State pollution control boards are generally the nodal agencies/enforcement agencies for compliance of the said norms.
- **Waste Management and Resource Utilization:** Industries are also required to manage their waste effectively. The Hazardous Waste Management Rules mandate that industries properly handle, treat, and dispose of hazardous waste. This includes waste generated during the manufacturing of tyres, which may contain rubber scrap, lubricants and other harmful substances. Regulations promote efficient utilization of raw materials, including rubber and carbon black, to minimize waste and resource depletion.
- **Energy Efficiency and Carbon Footprint Reduction:** India's National Action Plan on Climate Change (NAPCC) includes missions focused on enhancing energy efficiency and reducing carbon footprints. The Perform Achieve and Trade (PAT) scheme, part of the National Mission for Enhanced Energy Efficiency (NMEEE), covers industries like steel that supply materials for tyres and tread rubber. The PAT scheme sets energy consumption targets and encourages industries to adopt energy-efficient technologies.

Compliance and adherence to all of these regulations (as well as a few others) often requires significant investments in new technologies and processes by the industry, which if not undertaken in a timely manner can be a challenge for the industry.

Adhoc changes in policies

A challenge that the industry is facing is frequent changes in policies which makes it difficult for auto industry stakeholders not only to ensure adherence but also commit investments. Overall policy stability and transparency will be required going forward to ensure smooth technology transition and localization in the country.

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