Ambit
Asset Management

MONTHLY NEWSLETTER

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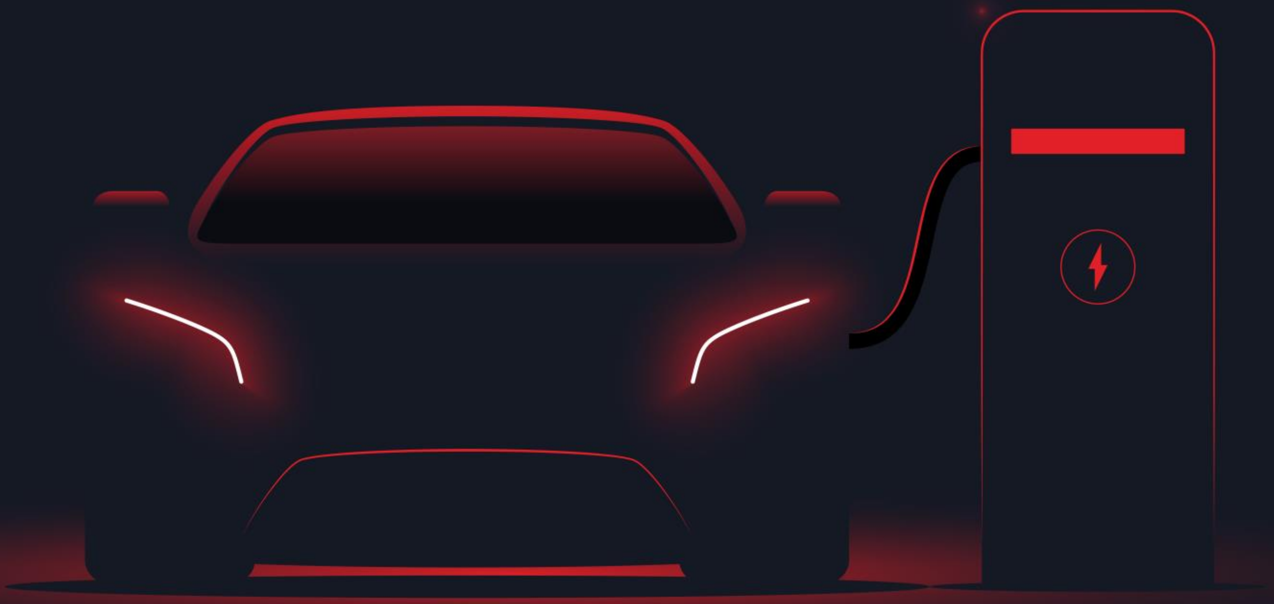
ELECTRIC VEHICLES: ALL CHARGED UP



Electric vehicles – Picking up pace

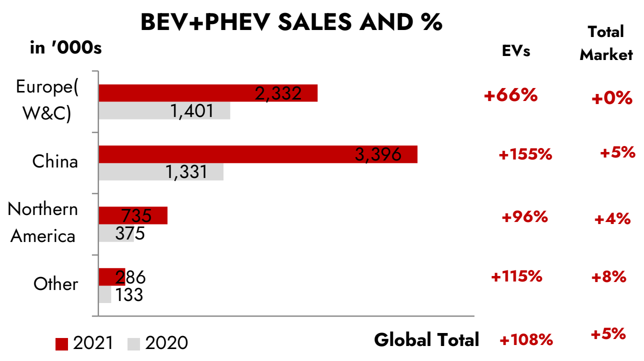
Global scenario

Rapid growth in EV sales globally

We are witnessing exciting times in the global auto industry, which is going through a radical transformation in the entire value chain. The transition from Internal Combustion Engine (ICE) to battery powered electric vehicle (EV) is happening at a rapid pace. OEMs and component manufacturers are left with only two options – Pivot or Perish. Companies are spending top dollars in R&D and acquisitions to stay in the game. The transition is also supported by governments across the world through subsidies and incentives, mainly to limit oil imports and reduce carbon emission.

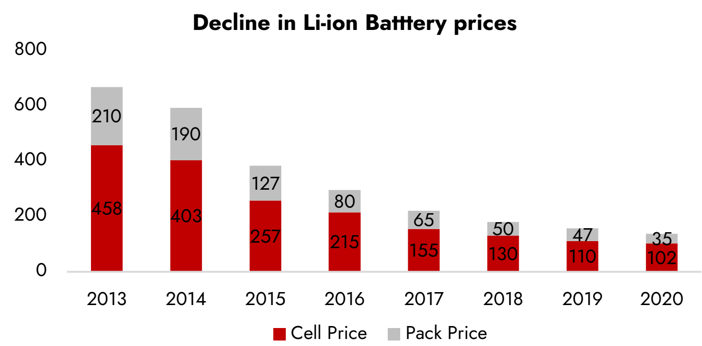
Global EV sales reached 6.75 million units in 2021, 108% more than in 2020 (Refer Exhibit: 1). This volume includes passenger vehicles, light trucks and light commercial vehicles. The global share of EVs – Battery Electric Vehicle (71%) & Plug-in Hybrid Electric Vehicle (29%) – in global light vehicle sales was 8.3 % compared to 4.2 % in 2020. While the EV market is exploding, global auto sales grew by mere 4.7 % over the crisis year of 2020. Pick up in EV adoption has been primarily on the back of sharp decline in battery cost over the last decade.

Exhibit: 1 Sharp growth in EV sales during 2021



Source: EV Volumes, Ambit Asset Management

Exhibit 2: ~80% decline in Li-ion battery cost over last 7 years



Source: BNEF, Ambit Asset Management

Ambitious capacity expansion plans by OEMs:

Several global OEMs have announced aggressive EV capacity expansion plans during the last six months. They are also trying to restore the power balance with battery manufacturers through in-house battery manufacturing. Currently, battery manufacturers enjoy high bargaining power as top five battery makers accounted for 83% of sales whereas top five global OEM accounted for just 41% of sales in 2020. Expansion plans of some of the largest companies include-

- Toyota raised its 2030 global EV sales volume target from 2mn to 3.5 mn units and battery production capacity forecast from 200GWh to 280 GWh.
- Nissan aims to achieve EV sales weighting of at least 50% by 2030, and plans to invest more than US$17 bn in electrification over the next five years.
- Hyundai raised its global EV sales volume forecast to 1.87 mn units from 1.0 mn units and set its battery demand forecast at 170 GWh.

Stock market rewarding pure play EV companies:

Pure play EV companies are gaining investor confidence due to the nascent industry and large total addressable market. 5 of the top 20 largest auto companies by market cap are EV pure plays - Tesla, Rivian, Lucid, Nio, Xpeng. Tesla continues to dominate the EV space, leading in terms of key factors such as range, charging infrastructure and battery cost. Apple is working on its own EV for the past 6 years and is still few years away from first launch while Amazon is a major investor in Rivian. In China, Baidu is backing WM Motor, Alibaba is a major investor in XPeng and Tencent is one of the largest shareholders of Nio.

Domestic EV market

Indian EV market is also gaining momentum, especially in the 2/3-W segment. While the initial cost of EV is 50% high, a 20% lower operating cost vis-à-vis ICE models implies a total lower cost of ownership (TCO). This makes it extremely cost effective for vehicles with heavy usage such as last mile delivery.

Exhibit 3: EV penetration in 2/3-W has been increasing at a rapid pace

EV sales (units)	FY22	FY21	YoY (%)
3w	177,874	88,391	101%
2w	231,338	41,046	464%
PV	17,802	4,984	257%
Total	**427,014.00**	**134,421.00**	
EV penetration (%)			
3w	45.8%	34.2%	
2w	1.9%	0.4%	
PV	0.7%	0.2%	

Source: FADA, Ambit Asset Management

EV industry – Receiving Government Nudge

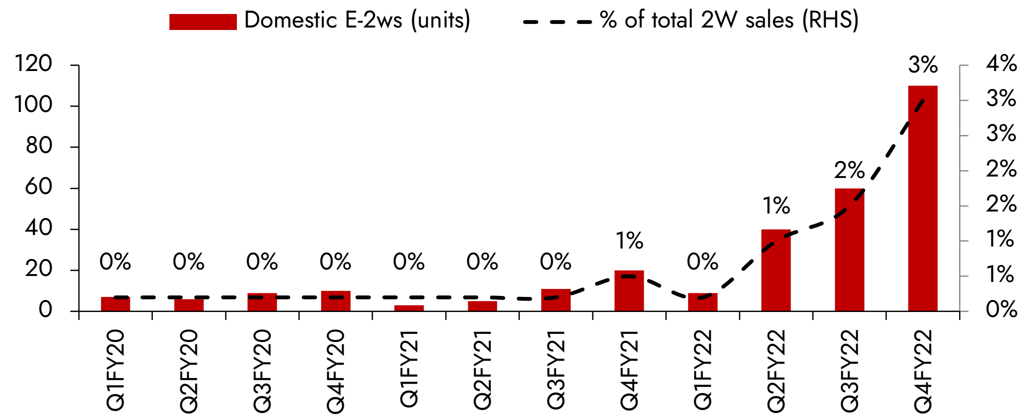
1. Indian government is pushing the EV adoption due to following reasons –
    a. Reduce oil dependence - India imports $102 bn worth of crude oil causing inflationary pressure and a wider current account deficit
    b. Curb Air pollution - Out of the 20 most polluted cities globally, 14 are in India.
    c. Climate summit in Glasgow - India committed to reduce its net carbon emissions to zero by 2070

2. Government is offering several subsidies and incentives to boost the EV industry.
    a. **FAME 2** - Government is providing a subsidy of Rs15,000/KWH on high speed vehicles (above 40kmph) and a minimum range of 80kms. It ranges from ~25-35% of the ex-show room price of E-2W.
    b. **Production-Linked Incentive (PLI)**
        - India approved a ₹18,100 crore production-linked incentive (PLI) scheme for building Tesla-style giga factories to manufacture batteries. The plan is to set up 50 giga watt hour (GWh) manufacturing capacity for advance chemistry cell batteries by attracting investments totalling $6bn.
        - PLI scheme for $3.4bn is announced to promote the transition to clean automotive technologies. The scheme is expected to generate investments of over $5.5bn in five years and incremental production of over $30bn.
        - Cabinet sanctioned $10bn for the ambitious project, titled Programme for Development of Semiconductors and Display Manufacturing Ecosystem. India will set up more than 20 semiconductor design, components manufacturing and display fabrication units over the next six years.

Burgeoning domestic E-2W market:

The demand momentum for electric two-wheelers (E-2Ws) remains strong with a 464% YoY growth in FY22 driven by rising petrol prices, new launches, and government subsidies. While E-2W are growing at a rapid pace, conventional 2-W declined in last few years. Monthly run rate of E-2W picked up from 8,000 units in Mar-21 to 50,000 units in Mar-22. Strong growth is expected to continue as most OEM have a strong pipeline of new launches.

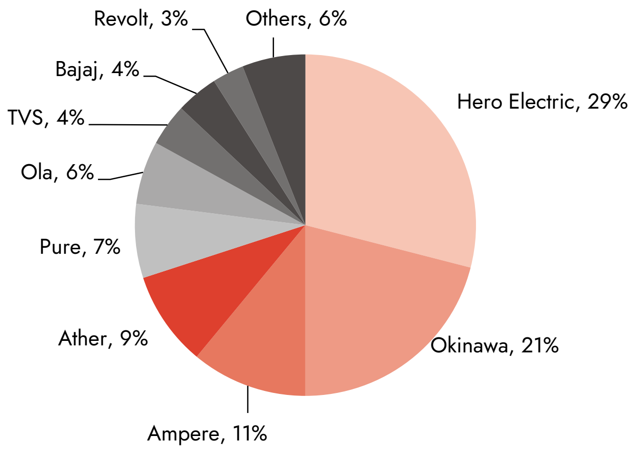
Exhibit 4: Sharp pickup in E-2W sales in last couple of quarters



Source: Vahan, Ambit Asset Management

Hero Electric and Okinawa, which operate mainly in the low/medium speed have dominated with 29% and 21% market share respectively. E-2W market is ruled by scooters with only one E-motorcycle player – Revolt. Competitive intensity has been increasing with entry of new players as well as capacity expansion. Ola Electric, which started supplying from Nov'21, has already reached 19% share in Mar-22.

Exhibit 5: Top 4 players constitute 70% EV 2W Market Share

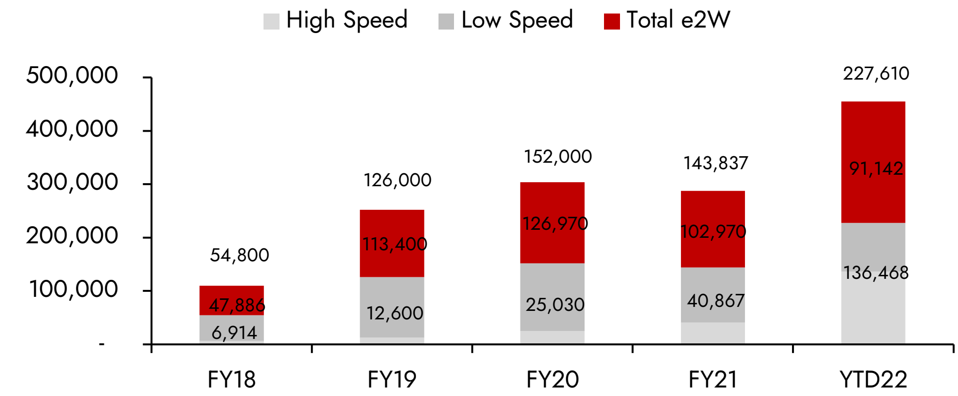


Source: Vahan, Ambit Asset Management

a. Bulk of the sales come from low speed models

Low/medium speed E-2W would achieve total cost of operation (TCO) parity at less than 10Km of daily usage, while TCO parity for high speed 2Ws is achieved at 40+ Km daily usage. This makes low speed electric 2W more attractive than high speed 2W. However, FAME2 subsidy has improved the affordability of high speed E-2W, leading to a sharp growth. The trend is expected to reverse in favor of slow-speed 2W as the Fame 2 subsidy expires by Mar24. Similar trend is witnessed in China, where electric bicycles accounts for almost half of the electric 2W market.

Exhibit 6: Growing share of premium e2W



Source: SMEV, Ambit Asset Management

b. Aggressive Capacity Expansion:

Increasing adoption of high-speed EV, driven by Fame II subsidy is pushing OEMs to improve the performance proposition and focus on the 100km+ range & 70km+ top speed segment. Companies are ramping up their capacities and launching new products to gain share in the rapidly growing market.

Exhibit 7: Aggressive capex plans by OEMs

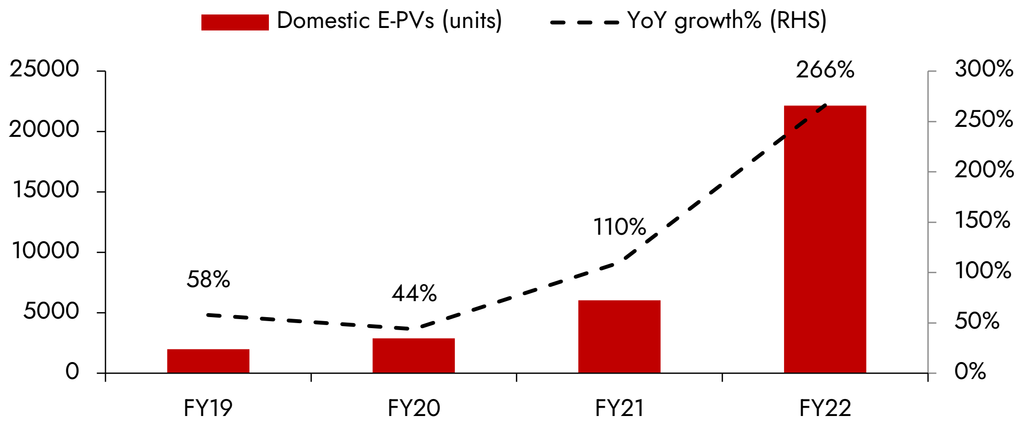
OEM	rrent Capacities (units p.a)	anned Ramp up (units p.a)	Timeline
HERO ELECTRIC The smart move	500,000	750,000	Middle of CY22
OKINAWA	180,000	480,000	CY22
AMPERE	120,000	250,000	CY22
ATHER	120,000	400,000	CY22
SIMPLE	n/a	1,000,000	CY22
OLA ELECTRIC	2,000,000	10,000,000	CY23
TVS	7,800	120,000	FY23
BAJAJ	60,000	500,000	FY23

Source: Company, Ambit Asset Management

Electric Passenger vehicles – Still scratching the surface

The domestic electric PV industry grew 266% YoY in FY22 although on a very low base. Electrification in domestic PV space has lagged global PV industry. Unlike the E-2W market, OEM in PV industry have resisted from investing in acquiring the technology, which resulted in very few vehicle launches. However, OEMs are investing heavily to launch several models over next few years.

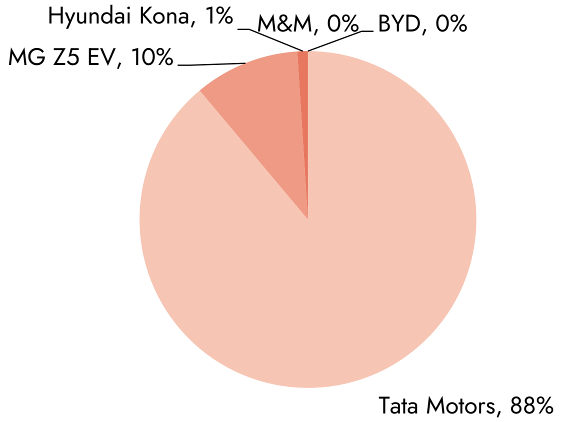
Exhibit 8: Sharp growth in FY22 although over a low base



Source: SIAM, Ambit Asset Management

Tata Motors continued to dominate the market with a volume of ~19,000 units (up 353% YoY) and a market share of ~88% (higher 1700bps YoY), in FY22.

Exhibit 9: Tata Motors is the clear leader in domestic E-PV market



Source: SIAM, Company, Ambit Asset Management

Strong Launch Pipeline

OEMs are investing heavily to transition into the EV space.

- Hyundai and Kia are planning to invest $200mn to build a mass market EV
- Tata is looking to invest another $1Bn and launch 10 EV models by 2025
- Maruti has collaborated with Toyota to launch first EV by CY25
- Mahindra is investing $400mn to launch 16 EV models by 2027

Key headwinds behind swift EV adoption

a. **Higher upfront investment:**

Compared to internal combustion engines, EV have a significantly higher upfront cost (~50% higher in 2W), largely on account of battery. Battery is 40-50% cost of vehicle and is made of scarce natural resources such as Lithium, Nickel, and Cobalt.

India imports most of the raw materials, which account for 50% of the EV battery cost. Chile accounts for 58% of the world's lithium reserves while Congo accounts for 50% of world's Cobalt reserves. This further creates heavy dependence on other nations.

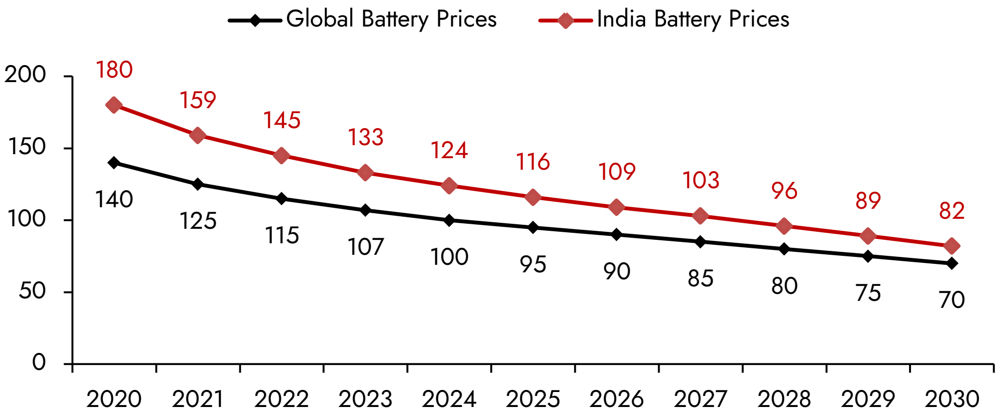
Exhibit 10: Battery pack constitutes ~50% of the vehicle cost

Component	Image	Use	Price
Battery Pack		Consists of multiple cells put together to form the source of energy that powers the motor	40-50%
Electric Motor		Converts electrical energy from battery to mechanical energy to be supplied to the wheels	10%
Power Train (Motor Controller)		Controller regulates the electrical energy from the battery to the motor and other components	~5%
Power Train (Inverter)		Converts electric current into AC/DC	~5%

Source: Industry, Ambit Asset Management

b. **Inadequate domestic battery manufacturing capabilities:**
OEMs import EV battery significantly above global prices, which impacts the affordability of the vehicle. Government is pushing for localization to bring down the battery prices.

Exhibit 11: Indian battery prices are ~30% higher than global prices



Source: Broker Reports, Ambit Asset Management

c. Lack of Charging Infrastructure:

Robust charging infrastructure is key for ramping up EV sales as EV customers have range anxiety - fear of running out of power and not being able to find a charging point. Several companies are investing heavily to improve the charging infrastructure.

- Tata Power, country's largest EV charging solutions provider, has deployed 1,000+ EV charging points across 200 different cities under the EZ Charge brand. The company is planning to have a base of 10,000 charging stations.
- Indian Oil Corporation and BPCL (currently have 450/30 charging stations) are planning to setup 10,000 and 7,000 charging stations respectively over the next few years.

d. Financing:

Currently, <7% of all E-2W in India are financed v/s 80% financing of ICE 2Ws. This is mainly due to the ambiguity in estimating the replacement cost. At present, it is difficult to estimate the life of a battery and its residual value. Also, a large portion of E-2W sold in India are low-speed, which don't require registration. This creates traceability issue for the financiers.

CONCLUSION

Fossil fuel is a limited resource and at some point we have to switch to other forms of energy. Electrification in the mobility space holds immense potential for enhancing India's energy security, reducing greenhouse gases and providing a sustainable progress path.

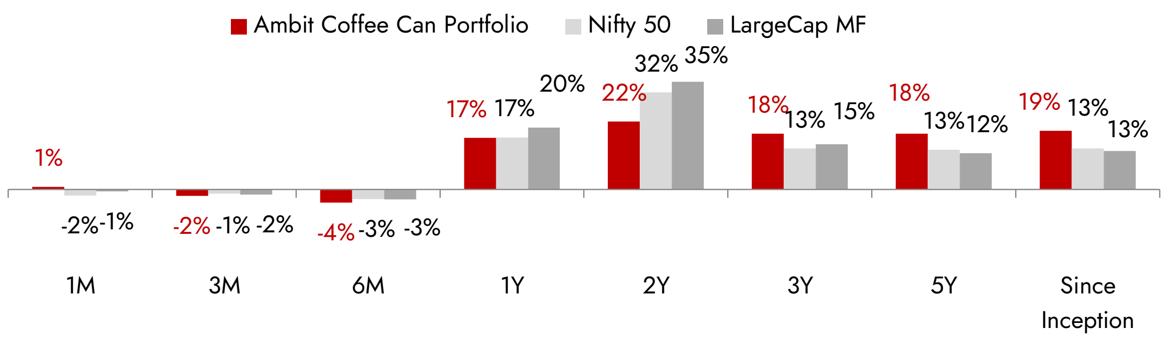
Despite better TCO and lower pollution, EV hardly constitutes 1-2% of the auto market due to inadequate charging infra, limited offering from large incumbents, range anxiety and ambiguity in resale value. However, the adoption is expected to pick up meaningfully as these issues are getting addressed.

The pace of EV transition is expected to be fastest in 2/3-W followed by PV and then commercial vehicles. We believe that companies with large share in entry level scooter/bikes are more vulnerable. As highlighted in our Disruption Note – Vol 13, TVS Motors is more insulated from the EV disruption due to its diversified portfolio and rising premium mix. TVS also has tie-up with Tata Power and Jio-BP for charging infra and has recently acquired stake in bike taxi aggregator "Rapido" and European E-bikes manufacturers. Auto ancillary companies, especially operating in battery, clutches, radiator and gears are likely to be adversely impacted as compared to those positioned in interiors and electricals & electronics. The key to survival and growth will be nimble footedness, the quicker they adapt, better the chances of survival.

Ambit Coffee Can Portfolio

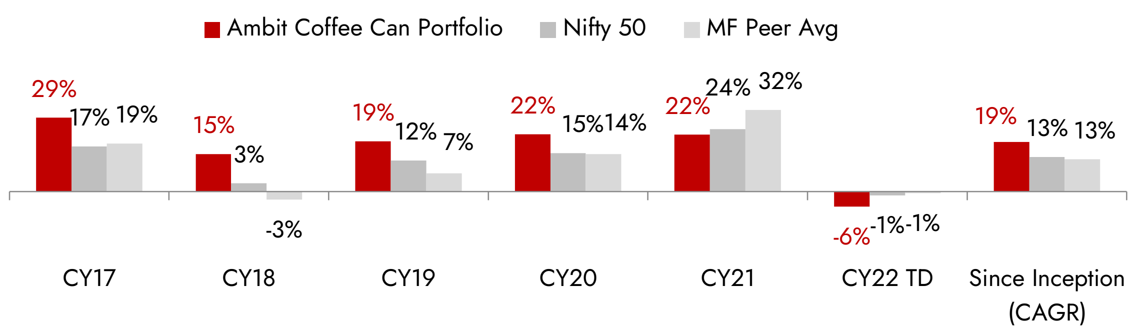
At Coffee Can Portfolio, we do not attempt to time commodity/investment cycles or political outcomes and prefer resilient franchises in the retail and consumption-oriented sectors. The Coffee Can philosophy has unwavering commitment to companies that have consistently sustained their competitive advantages in core businesses despite being faced by disruptions at regular intervals. As the industry evolves or is faced by disruptions, these competitive advantages enable such companies to grow their market shares and deliver long-term earnings growth.

Exhibit 12: Ambit's Coffee Can Portfolio point-to-point performance



Source: Ambit; Portfolio inception date is March 6, 2017; Returns as of 30th Apr, 2022; All returns are post fees and expenses; Returns above 1-year are annualized; Note: Returns prior to Apr'19 are returns of all the Pool accounts excluding non-aligned portfolio, and returns post Apr'19 is based on TWRR returns of all the pool accounts.

Exhibit 13: Ambit's Coffee Can Portfolio calendar year performance



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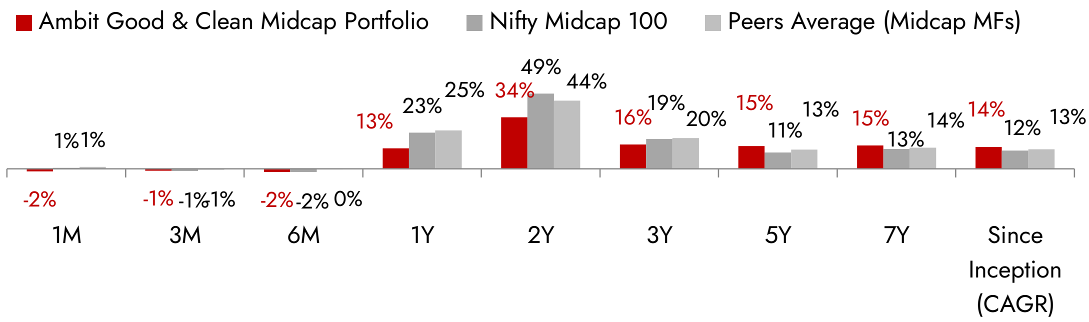
Ambit Good & Clean Midcap Portfolio

Ambit's Good & Clean strategy provides long-only equity exposure to Indian businesses that have an impeccable track record of clean accounting, good governance, and efficient capital allocation. Ambit's proprietary 'forensic accounting' framework helps weed out firms with poor quality accounts, while our proprietary 'greatness' framework helps identify efficient capital allocators with a holistic approach for consistent growth. Our focus has been to deliver superior risk-adjusted returns with as much focus on lower portfolio drawdown as on return generation. Some salient features of the Good & Clean strategy are as follows:

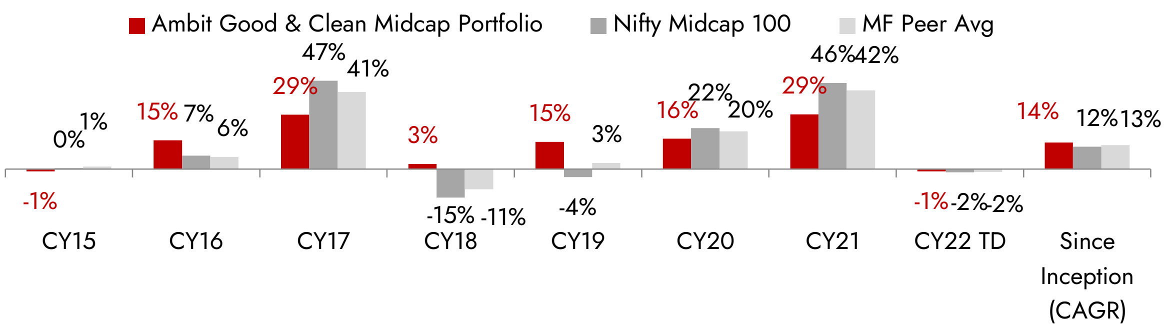
- **Process-oriented approach to investing:** Typically starting at the largest 500 Indian companies, Ambit's proprietary frameworks for assessing accounting quality and efficacy of capital allocation help narrow down the investible universe to a much smaller subset. This shorter universe is then evaluated on bottom-up fundamentals to create a concentrated portfolio of no more than 20 companies at any time.
- **Long-term horizon and low churn:** Our holding horizons for investee companies are 3-5 years and even longer with annual churn not exceeding 15-20% in a year. The long-term orientation essentially means investing in companies that have the potential to sustainably compound earnings, with this compounding earnings acting as the primary driver of investment returns over long periods.
- **Low drawdowns:** The focus on clean accounting and governance, prudent capital allocation, and structural earnings compounding allow participation in long-term return generation while also ensuring low drawdowns in periods of equity market declines.

Exhibit 14: Ambit's Good & Clean Midcap Portfolio point-to-point performance



Source: Ambit; Portfolio inception date is March 12, 2015; Returns as of 30th Apr, 2022; All returns above 1 year are annualized. Returns are net of all fees and expenses

Exhibit 15: Ambit's Good & Clean Midcap Portfolio calendar year performance

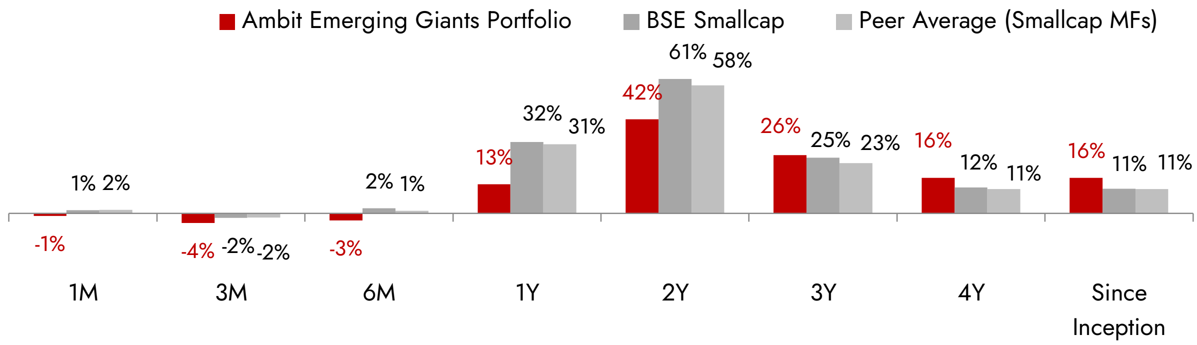


Source: Ambit; Portfolio inception date is March 12, 2015; Returns as of 30th Apr, 2022. Returns are net of all fees and expenses

Ambit Emerging Giants Portfolio

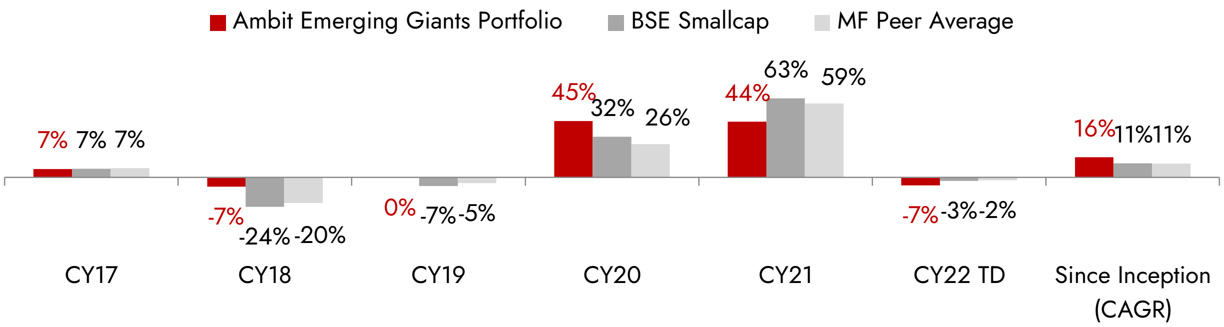
Smallcaps with secular growth, superior return ratios and no leverage Ambit's Emerging Giants portfolio aims to invest in small-cap companies with market-dominating franchises and a track record of clean accounting, governance and capital allocation. The fund typically invests in companies with market caps less than Rs. 4,000cr. These companies have excellent financial track records, superior underlying fundamentals (high RoCE, low debt) and ability to deliver healthy earnings growth over long periods of time. However, given their smaller sizes, these companies are not well discovered, owing to lower institutional holdings and lower analyst coverage. Rigorous framework-based screening coupled with extensive bottom-up due diligence lead us to a concentrated portfolio of 15-16 emerging giants.

Exhibit 16: Ambit Emerging Giants Portfolio point-to-point performance



Source: Ambit; Portfolio inception date is December 1, 2017; Returns as of 30th Apr, 2022; All returns above 1 year are annualized. Returns are net of all fees and expenses

Exhibit 17: Ambit Emerging Giants Portfolio calendar year performance



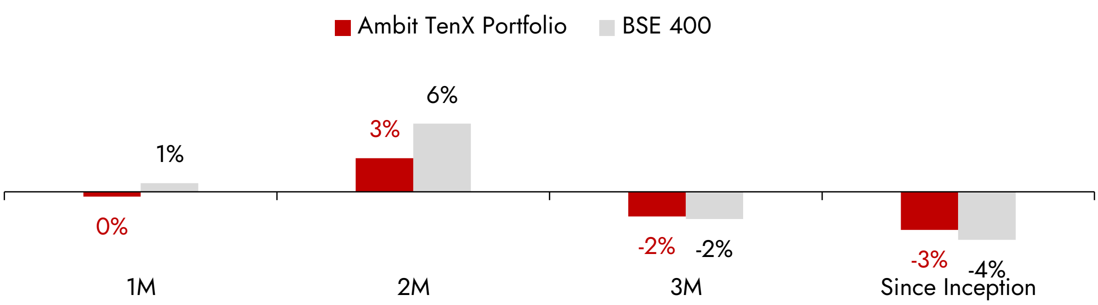
Source: Ambit; Portfolio inception date is December 1, 2017; Returns as of 30th Apr, 2022. Returns are net of all fees and expenses

Ambit TenX Portfolio

Ambit TenX Portfolio gives investors an opportunity to participate in the India growth story as the Indian GDP heads towards a US$10tn mark over the next 12-15 years. Mid and Small corporates are expected to be the key beneficiaries of this growth. The portfolio intends to capitalize on this opportunity by identifying and investing in primarily mid & small cap companies that can grow their earnings 10x over the same period implying 18-21% CAGR. Key features of this portfolio would be as follow:

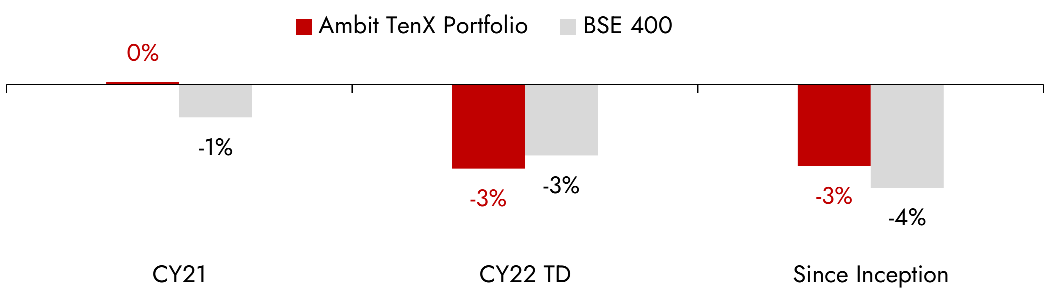
- **Longer-term approach with a concentrated portfolio:** Ideal investment duration of >5 years with 15-20 stocks.
- **Key driving factors:** Low penetration, strong leadership, light balance sheet
- **Forward-looking approach:** Relying less on historical performance and more on future potential while not deviating away from the Good & Clean philosophy.
- **No Key-man risk:** Process is the Fund Manager

Exhibit 18: Ambit TenX Portfolio point-to-point performance



Source: Ambit; Portfolio inception date is December 13, 2021; Returns as of 30th Apr, 2022; Returns are net of all fees and expenses

Exhibit 19: Ambit TenX Portfolio calendar year performance



Source: Ambit; Portfolio inception date is December 13, 2021; Returns as of 30th Apr, 2022. Returns are net of all fees and expenses

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Hence some of the information in this presentation may belong to the period when this product was managed by Ambit Capital Private Limited.

You may contact your Relationship Manager for any queries.

The performance data for coffee can product between 6th march 2017 - 19th June 2017 represents model portfolio returns. First client was onboarded on 20th June 2017. The performance data for G&C product between 1st June 2016 to 1st April 2018 also includes returns for funds managed for an advisory offshore client. Returns are calculated using TWRR method as prescribed under revised SEBI (Portfolio Managers) Regulations, 2020