MACKENZIE Investments

QUARTERLY INSIGHTS
Q3 2024
(PART TWO OF A TWO PART SERIES)

China's electrification of transport: railway and EVs

Recounting my experiences and observations from a two-week trip to Beijing, Shanghai area and Xinjiang Province

Gregory Payne, PhD, CFA
Senior Vice President, Portfolio Manager, Team Co-Lead
Mackenzie Greenchip Team

At Mackenzie Greenchip we have long been investors in the Chinese solar supply chain. And, while we haven't invested directly in other Chinese companies, we have always followed economic and political developments in China closely, as most of the global industries that pertain to the energy transition are heavily influenced – if not dominated – by the industrial manufacturing juggernaut that is China.

During this trip, in addition to our solar companies, I also visited several companies in China's rail sector. We have long been invested in the Western "big three" integrated rail rolling stock, signaling and systems providers, Hitachi, Siemens and Alstom. China's buildout of rail, and especially high-speed rail, in the past two decades is arguably one of the greatest infrastructure achievements of this young century and warranted learning more about the network of largely state-controlled companies at the heart of this development.

Finally, I looked to follow up on some of John Cook's experiences and observations in the battery and auto sectors by meeting with several industry analysts in Beijing and Shanghai. In the following report, I detail some of my impressions from my visits and discussions.

Separating rhetoric and reality: China's railway transformation

During my travels in China, I had the opportunity to use the high-speed rail service, long distance from Beijing to Shanghai, and then two shorter trips between Shanghai and Suzhou. The speed, smoothness and reliability of the service were all very impressive. Overall, the buildout of Chinese rail, and especially the high-speed network, is a remarkable achievement of technology, scale and arguably efficiency in infrastructure. The 45,000 km of high-speed rail is already more than 70% of the global total, and the speeds achieved and frequency of operation (maximum 350 km/h, as frequent as one train every three minutes) are unsurpassed. The overall rail network, at nearly 160,000 km, is second in size only to India. Much of the high-speed network runs on elevated track, supported by concrete pillars and is a common visible feature of the landscape, especially in the heavily populated coastal regions of the east.

> **Overall, the buildout of Chinese rail, and especially the high-speed network, is a remarkable achievement of technology, scale and arguably efficiency in infrastructure.**

This immense system is operated through China State Railway Group, which has 22 regional subsidiaries, all of which are entirely managed and controlled by federal and local governments. The building, maintenance and supply of the network, however, is provided by a separate network of companies which, while still state controlled, often have minority private ownerships that are publicly traded on Chinese stock markets. In Beijing, I met with several companies involved in providing the engineering, construction, and signaling and communications equipment and services.

Demonstration model at China Railway Signaling and Communications Company

The difference between the state-controlled rail companies (all examples of state-owned entities, or SOEs) and the much more entrepreneurial private solar sector was very apparent. SOE headquarters are apparently under-occupied grand campuses and management's priorities are not limited to the common financial metrics such as growth, profitability and return on capital. Priorities remain directed from the CCP, through the State Rail Company and its operating subsidiaries and include operating safety, technological development, service affordability, employment and stability. While these mixed priorities can be thought to validate the common view of SOE inefficiencies, not all of the state-driven priorities are necessarily at cross-purposes to the more traditional private sector imperatives, such as R&D and even affordability, which would incentivize cost discipline and may also stimulate demand.

For all the concern about misaligned SOE priorities, the publicly traded companies in the rail space have typically operated at relatively strong margins and comparable rates of return to similar industries abroad. China Railway Signaling and Communications (CRSC) has had double-digit ROE for most of its operating history. It has consistently generated strong free cash flow such that it has net cash now equal to nearly a third of its market value. Management is increasingly evaluated on these metrics. The construction and rolling stock equivalents of CRSC have slightly lower profitability and return metrics, but this is a dynamic that can be similarly observed in Western markets.

> **China Railway Signaling and Communications (CRSC) has had double-digit ROE for most of its operating history. It has consistently generated strong free cash flow such that it has net cash now equal to nearly a third of its market value.**

Thinking about the "efficiency" of the railway construction and operating system is an interesting exercise. It raises some questions about the notions of efficiency, and comparisons of systems of governance and capital allocation between the East and West. For all the apparent excess spending and employment and lack of focus on financial bottom line, the Chinese rail ecosystem has combined to build a fast, vast, reliable and affordable transportation infrastructure that moves people with much less energy and emissions intensity than just about any other option, certainly including electric vehicles. The publicly traded companies participating in this ecosystem are profitable, with reasonable rates of return. And a one-way ticket for the 1,300 km, 4.5-hour trip from Beijing to Shanghai costs less than $100 (USD). Compare that to the speed and budget of new rail construction in Western markets and to the ticket prices and government subsidies that these projects require, and the efficiency of our nominally more capitalist and private arrangements is far from obvious. In Mackenzie Greenchip's hometown of Toronto, we need only look at the much-delayed construction of the Eglinton LRT line to underscore these questions.

Dramatic transformation in China's auto fleet

The last segment of this report turns from rails to the roads. I met with several analysts of the auto sector and of its supply chains, principally batteries and battery materials and had the opportunity to travel the roads of Beijing, Shanghai and its surrounding provinces, and Xinjiang. The change from when I was last in China in 2017 was dramatic. The auto fleet appears much more modern and, after years of rapidly growing share of EV sales, much more electric; not only compared to 2017 but also versus the fleet in other regions of the world, certainly including North America. In 2024, analysts expect that over 50% of the passenger vehicles sold will be electric. In North America, this figure remains below 10%.

In 2017 there were a handful of Teslas on the road in China and no other competition in the EV space, foreign or domestic. The roads of tony Shanghai neighbourhoods were dominated by Western brands, especially German makers BMW, Audi and Mercedes. Western OEMs (original equipment manufacturers) had good representation at more moderate price points too, featuring VW, Toyota and GM/Chrysler — the two American brands were especially common in minivans. In 2024, while all these brands are still present, and the number of Teslas is significantly higher, as a group they are now vastly outnumbered by domestic brands, many of which didn't even exist in 2017, such as Nio, Xiaomi, Li Auto, xPeng, and even telecoms giant Huawei, which has succeeded in broadening to EVs where its American competitor Apple could not. Chinese brands compete at all price points and in general have a cost advantage versus Western OEMs even where those OEMs themselves produce in China. Most analysts expect Western OEMs to continue to lose share in China. Newer and younger automobile buyers are less attached to the status of Western brands as more leading Chinese brands emerge (incidentally, this threat to Western brands extends beyond just autos). In addition to threats to market share and volumes, the intensity of competition associated with more Chinese participation has led to price wars and margin deterioration. Meanwhile, in a reversal of the original Western penetration of the Chinese auto markets, Chinese OEMs are now looking to foreign markets for their next leg of growth and are forcing Western producers to play defense in their home markets too. While the US has effectively barred China access to their markets and can afford to do so — the small share of American OEMs in China leave it with little to lose in a trade war. Meanwhile, newly imposed EU tariffs are unlikely to be enough to erode the cost advantage of cars produced in China. Even with these tariffs, Chinese OEMs are anticipating better margins in Europe than in China. And in other non-Western markets, such as southeast Asia, the Middle East and Africa, the market share shift to Chinese producers could be even more dramatic.

> **Even with these tariffs, Chinese OEMs (original equipment manufacturers) are anticipating better margins in Europe than in China. And in other non-Western markets, such as southeast Asia, the Middle East and Africa, the market share shift to Chinese producers could be even more dramatic."**

There were two consensus winners among the analysts I spoke to, both increasingly well known in the West. First BYD, which has the greatest scale at 4 million vehicles produced. It also has the greatest range of price points and market niches covered, including being far and away the leader in the plug-in hybrid electric vehicle (PHEV) category that is showing much more growth than battery electric vehicles (BEV) this year. BYD is vertically integrated and able to produce blade batteries to the specifications of its vehicle models and generate a cost advantage doing so. Second, in the battery space, Contemporary Amperex Technology Co. Ltd. (CATL) has achieved a leadership position that is very unusual in Asian commodity technology manufacturing. CATL has managed to achieve both dominant market share and industry-leading margins in the giant market for large-size batteries. It is somewhat difficult to pinpoint the source of the CATL advantage as it is likely a combination of many factors, including scale and logistics advantages and vastly higher R&D and data gathering than its peers. One manifestation of these advantages is that CATL can use lower quality and lower density anode and cathode material to make end-product batteries with equivalent quality and safety, thus producing at lower costs than its competition.

Huawei Avatr parked outside CATL Battery head office

International ambitions: image of a BYD showroom in Canary Wharf, London

The EV market is currently at something of a crossroads, as very high growth expectations are somewhat tempered, demand shifts from BEVs to PHEVs, and as it increasingly looms large in political economic rivalries. China's position in the full supply chain is very strong, yet aggressive valuations have reset somewhat in this uncertain environment, also due to general Chinese economic and equity market weakness. BYD, CATL and their many peers will be companies that we will continue to follow closely.

Key takeaways

To conclude, EVs are not the only market at a crossroads. So too are solar, wind, energy storage, other commodities and the Chinese economy in general. China is wrestling with a challenging shift from an investment dominated economy to more emphasis on consumption; a property market financial crisis; dramatic demographic changes; and increasingly aggressive posture and policy from Western rivals. While I was there, the central government announced the beginning of a series of economic and financial interventions that seem designed to address these challenges, including but not limited to: lower interest rates and reserve requirements, thus immediately lowering the variable mortgage rates that are standard for all mortgages in China; allocation of funds to ensuring the completion of suspended property developments, for which many citizens have placed downpayments; and creation of new funding ("repo") facilities for financial intermediaries to support investment in equity markets. The overall thrust of these still-developing plans is to stabilize – but not reignite – property markets, attempt to direct more of the great pool of Chinese savings from property and savings accounts to equities, support employment and bolster overall consumer confidence.

The financial markets' reaction to these announcements was wild, to say the least, with first very large gains across virtually the entire market, and then, into October, dramatic volatility in both directions as speculation continued about further measures. Some Western observers maintained skepticism that this was not yet the aggressive, full-QE-style bailout that Western markets have become accustomed to.

Needless to say, this will be a developing story, as will the story of China's economy in general and its place in the world. Without a doubt, from our perspective, with its enormous industrial capacity and propensity for real direct investment, China is the most critical actor in the energy and infrastructure transitions that are core to our investment thesis and mandate. We will continue to follow closely and invest selectively.

To read part one, click here.