Growth of Electric Cars in China: Trends, Global Effects, and What's Next.

Gian Andrea Gahler

June 2024

Trends in the Chinese Electric Vehicle (EV) Industry

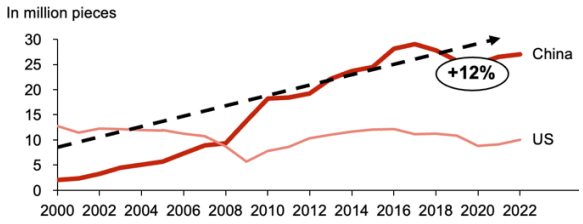
Have you ever heard of car brands such as BYD, Xpeng, Nio, or Aion? Few outside of China will have heard of them. However, BYD's sales of battery electric vehicles (BEVs) rival those of Tesla and exceed the sales of any other manufacturer. If plug-in electric vehicles (PHEV) are included, BYD sold 300'000 more cars than Tesla in the first two quarters of 2023. In China, BYD is already the most-sold electric vehicle brand and it has even overtaken the overall car sales of Volkswagen in certain months, the leader in terms of sales for decades in China. BYD's ambitions do not stop there. Recently, it announced plans for a first factory in Europe. Other Chinese manufacturers too have started to sell their cars in Europe and now directly compete with established German car brands. At the same time, the European Commission has launched an anti-subsidy investigation into the import of Chinese BEVs. All of these factors combined lead to a potent mix, promising great changes to an established industry.

Thus, different questions arise. How could the automotive industry in China, dominated by German brands for decades, change so quickly and be rivaled by Chinese brands? What differentiates Chinese electric vehicles and what advantages do Chinese manufacturers have when producing battery electric vehicles? Finally, what is the future of German cars both in China as well as in Europe? These questions are integral to understanding the future of the automotive industry and this article aims to provide in-depth insights into these topics.

The beginnings of the Chinese automotive industry

Although cars existed in China before the economic reforms of 1979, the automotive industry only began to flourish after the government opened the economy to foreign investments through joint ventures. Early investors included Volkswagen, American Motors Company, and Peugeot. These partnerships primarily focused on assembling car parts, leading to limited knowledge transfer. Over time, Volkswagen became the dominant player in the Chinese market, maintaining a 13.5% market share. This growth occurred alongside a substantial boom in Chinese automotive sales, as illustrated in Figure 1.

Figure 1: Automotive production output

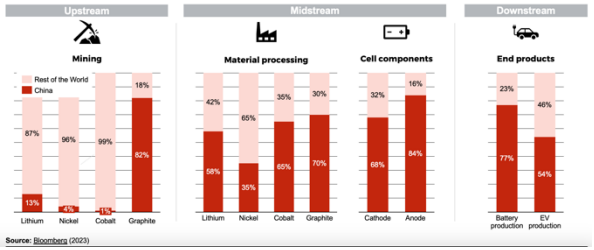


Source: own illustration, data from the Economist Intelligence Unit

China's domination of the EV supply chain

While the EU and US are now starting to secure critical minerals in Africa, China has done so already. In China, the resources are limited, leading to the acquisition of foreign mines. The mined resources are then transported back to China where the domination of the most important part of an electric vehicle's supply chain begins, its battery.

Figure 2: China's share of worldwide production in %



Source: own illustration, data from Bloomberg News

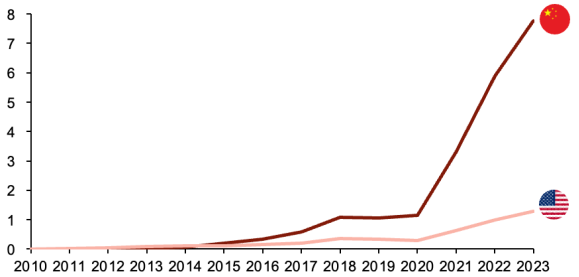
As illustrated in Figure 2, China dominates the battery supply chain, beginning with the processing of raw materials, which already takes place domestically. China processes over 50% of the world's lithium and 66% of its cobalt.

The most important parts of the batteries, namely the cathode and anode, are also mainly manufactured in China. Hence, China has a firm grip on battery production and the main part of an EV.

China's up-and-coming EV industry

The dominance of China's battery supply chain is reflected in its domestic car market. Many new car brands have entered the market with little consolidation so far. The most prominent EV brand, BYD, sold 3.5 times the number of electric vehicles that Tesla, the second most popular brand, sold in the 51st week of 2023. Furthermore, as shown in Figure 3, Chinese EV registrations have skyrocketed since 2020.

Figure 3: Chinese EV Registrations in millions



Source: own illustration, data from the Economist Intelligence Unit

This substantial increase in EV registrations is also reflected in the market share of EVs in China which jumped from 5.5% in 2020 to 13.3% in 2021.

The substantial rise in electric vehicle purchases in China has been bolstered by extensive governmental support, including exemptions from consumption and purchase taxes, direct purchase subsidies, and investments in infrastructure. It started in 2009 when the government started to subsidize EV producers for public transport, private consumers, and taxi companies. Until 2022, the Chinese government has spent 28 billion USD on EV subsidies and tax breaks. However, some of the subsidies have been phased out as of the end of 2022. Mainly purchase subsidies have been phased out. Tax breaks for producers may soon also be phased out, due to the increasing maturity of the market.

Western countries criticize China for many of these programs due to the creation of overcapacity as a result of the substantial investments. China argues that it is able to produce a large number of EVs due to a favorable supply chain and innovation.

Overall, the mixture of factors was very successful in keeping prices low. Chinese manufacturers have a cost advantage of approximately 10,000 Euros over their European counterparts, which explains the success of EVs in China.

Future of Chinese consumers and the EV industry

With the recent economic downturn in China, the EV market may consolidate, leading to the exit of smaller players. The company most likely going to survive is BYD with its significant market share advantage over competitors.

In light of different customer behaviors, the Chinese automotive industry is developing and focusing on different key consumer demands. Chinese consumers tend to prefer cars focusing on convenience and less on the driving experience (speed, acceleration, etc.). Chinese consumers want cars that make driving comfortable for the entire family through sound systems, AI-controlled systems, and screens for children to watch TV shows. These features enhance the overall driving experience, particularly during long commutes through heavy traffic. Other aspects might involve seats that can transform into beds, allowing for restful sleep during breaks at work.

This all means that Chinese consumers have different demands from European consumers, where the quality of the car is much more important. This is often expressed through the gap dimensions and acceleration as well as the sound of the car.

Expansion abroad

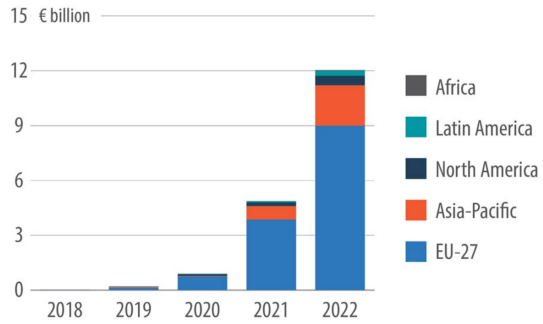
After 2020, Chinese exports of EVs exploded. However, most EV exports from China are to Europe and not the US. This can be explained by the 27.5% US tariff on Chinese EVs that were applicable until now. On May 4, 2024, the Biden administration announced an increase of the tariffs on Chinese EVs to 100%, further decreasing the advantage of Chinese manufacturers. This eliminates the approximate 20% cost advantage Chinese EVs have. Threatened by these developments, the European Commission has launched an anti-subsidy investigation. Nevertheless, such actions should not be taken lightly. Retaliation by China must be expected which would hit German car manufacturers much harder. At the same time, Chinese manufacturers are building plants for batteries in Europe which would mitigate the potential tariffs from the EU.

This development not only threatens workers in the EU and the US, where 2.5 million and 1 million workers respectively are employed by the industry, but also other major automotive manufacturing

countries are at risk. This includes Japan and Mexico with each approximately 1 million workers.

While rich countries with stakes in the industry may retaliate with tariffs, the Global South may welcome the development of cheap Chinese EVs and the increase in living standards they bring.

Figure 4: BEV exports from China by Region in billion Euros



Source: European Parliament

Impact on the German automotive industry

In China, the EV industry is the fastest-growing segment in the automotive industry. This means that traditional German fuel cars will have to adapt. Thus, German car brands, mostly known for gas-engine cars, have a difficult time ahead. This will mostly be felt by low-cost car brands while premium brands like Porsche will experience less pushback due to the strength of their respective brands.

The stance of the German automotive industry in China may be further threatened by the differing user expectations and the subsidy investigation of the EU. The EU is investigating the substantial Chinese imports into the EU and evaluating possible tariffs. However, imposing tariffs could backfire. The Chinese market is one of the most important ones for many German car manufacturers. Thus, if China retaliates, this could hurt the German manufacturers and economy even harder while Chinese manufacturers are only just exploring the European market and possible launches.

Conclusion and future implications

In summary, China's electric vehicle industry has experienced rapid growth, propelled by strategic control over the battery supply chain and substantial domestic support. As Chinese manufacturers extend their reach into Europe, they present a formidable challenge to established brands. The future of the global automotive industry will hinge on how traditional manufacturers adapt to these changes and navigate the evolving market dynamics.

Future implications are difficult to make due to the dynamic and growing nature of the industry. BYD is the most likely player to remain in the industry after it has consolidated in a next phase. It looks like China has a firm grip on the EV supply chain aiding its global expansion. It is likely that Chinese suppliers will be able to establish themselves in emerging market economies as dominant players due to the competitive price they are able to offer to consumers.

European manufacturers have to catch now up to an advanced Chinese industry. Subsidies may postpone the large-scale introduction into Europe and other advanced economies, but traditional car makers have to adapt to a new reality and respond effectively to remain relevant players at a global level while even domestic markets may not be as resistant to the allure of cheap cars as they may think.