



Electric Vehicles are leaving the West Behind

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Abstract

We analyze how Electric Vehicle (EV) market oscillations impact the worldwide EV supply chain, as well as the strategy of all its participants. We show how market shifts in Europe and the US are currently benefiting China.

Introduction

The current transition from internal combustion engines (ICE) to electric vehicles is progressing unequally across the world. In 2023, the Chinese EV market dwarfed by a factor four the sales of EVs in the USA, with 8.1 million new EVs, representing 37% of all new vehicle sales. This enormous market-pull powers the Chinese EV supply chain, especially Chinese battery manufacturers, who produce today more than 75% of all EV batteries worldwide and reinvest their profits into more plants and more research.

In the US and Europe, on the contrary, sales of EVs were below expectations, as explained by high EV prices, range anxiety and charging network issues, which led to a reduction of planned investment both in EV and battery plants.

In China, EV sales revenue has funded such a rapid technical progress of vehicles and batteries that most of the reasons why US and European EV markets have faltered will have disappeared within a few years, leading to increased market adoption at a time when the Chinese EV supply chain will have an enormous technical and market lead over the US and Europeans ones.

Market fluctuations impact the EV supply chain

In recent years, EV markets have been quite positive until Q3 2023, when Chinese car manufacturers surprised the market with reduced sales growth, which triggered a price war in China by the various entrants competing to retain market share. This slowdown of EV sales propagated to Europe and the US in 2024, with a constant stream of monthly news of Western companies reducing staffing, closing plants and postponing their plans to open new ones, for cars and for batteries.

At the end of June 2024, one of the most respected car analysts, John Murphy from Bank of America, advised Detroit's legacy automakers to abandon the Chinese market altogether and focus on trucks and

SUVs [1]. Shortly after, Volkswagen shocked its shareholders by announcing it could close its Audi plant in Brussels, because sales of the “Q8 e-tron” it manufactured there were sluggish [2].

The Causality Link platform which measures sentiment over a wide range of indicators confirms this decline of EV sales, with the blue line representing the percentage of positive past statements and the pink or green zones representing the percentage of statements about the future of EV sales.

The pink zones of the end of 2023 and of Q1 2024 represent warning signals about this decline, while the green zone of the last 4 months indicates an optimistic attitude about the future of EV sales, contrasting with the current reality of about 70% of mentions indicating a current growth in EV sales.

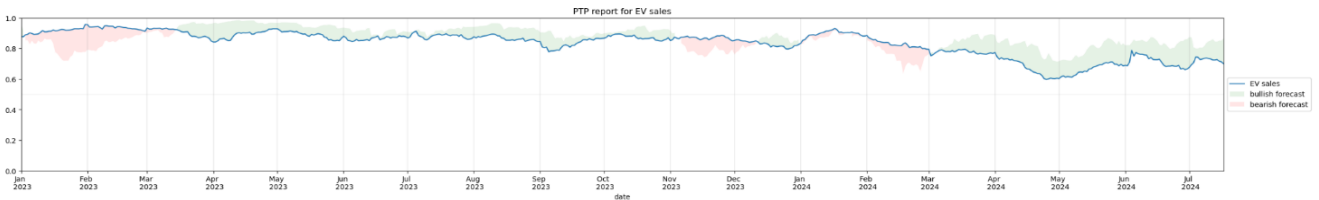


Figure 1 Percentage of positive mentions (past and future) about EV sales worldwide, Jan 2023 to Present

The slowdown in EV sales has already impacted its supply chain. For example, in May 2024, Ford was considering scaling back or postponing battery plants with CATL and SK On [3], which in July declared a state of emergency due to the weak EV sales of its European and US customers [4]. Further down the supply chain, battery material supplier Umicore announced disappointing Q2 2024 results and reassessed its investment strategy [5].

However, there are still signs of strong investment in the battery supply chain in the US, as the financial incentives of the Inflation Reduction Act favored the decision of the creation of new battery plants by Toyota, LG Energy and Volkswagen whose PowerCo subsidiary plans three new battery plants in the coming years.

In China, a strong EV market fosters an intense competition on battery research and production, with the world leader, CATL, announcing in July the coming availability of a “condensed battery” with an impressive 500Wh/kg capability while most current batteries average less than 250Wh/kg [6] and raising a \$1.5B fund to improve its supply chain worldwide [7].

Bullwhip effect and future consequences

Supply chains are often subject to the so-called “bullwhip effect” where a fluctuation in sales of a product impacts the providers of the components of that product with both a delay and an amplification of the upstream change.

The potential for such an effect on batteries, the main component of electric vehicles, is quite real. For one thing, the rate of growth of our worldwide capacity is larger than the rate of growth of the EV sales worldwide as shown in Fig2: over 80% of mentions of increases in battery production are positive (with a more subdued outlook) vs the 70% of Fig1.

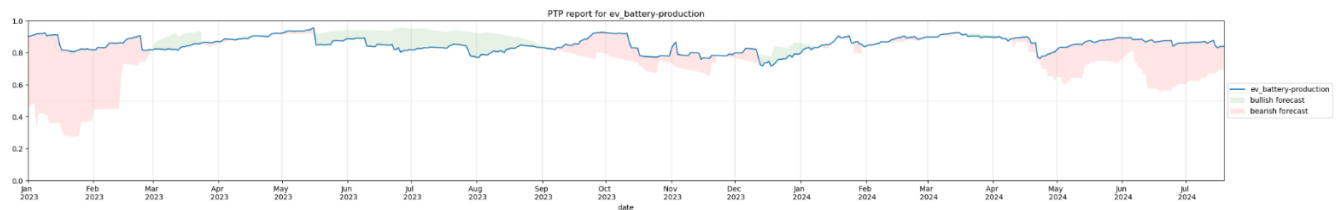


Figure 2 Percentage of positive mentions (past and future) about battery production worldwide.

These additional capacities worldwide have the potential of creating a serious glut of batteries and a price war which will degrade the profitability of current US and European projects. Then, the potential of the next generation of “solid-state batteries” will accelerate this price decline and could render obsolete many of these future manufacturing capacities well before their pay back period [8].

On the positive side, the inevitable reduction of costs and increase in range autonomy will remove two of the main hurdles to massive EV adoption. The charging options for a vehicle with a range of 1,000 miles are much more varied, which will reduce the issues of the current charging network, itself undergoing rapid improvement worldwide.

These dynamics enable us to predict confidently that the EV mid-market will experience a strong resurgence within a couple of years, but to question the preparedness of the whole US and European EV supply chain at that time, given the consistent and rapid progress of their Chinese competitors.

Conclusion

The Western (EU + US) car manufacturing industry (outside of Tesla) has made several mistakes in the EV transition. Before 2019, they did not believe in the future of EVs and derided Tesla’s efforts. Then, as they started to produce EVs, they focused mostly on producing high-end products imitating the Tesla Model S strategy. They did not appear to understand that the battle was shifting to the efficient production of cheaper cars through new manufacturing processes that the simplicity of EVs enabled [9]. This is why today their margins on EV sales are mostly negative, or in the low single digit numbers, compared to the 14% of Tesla.

They are now facing an even bigger challenge: their home markets for EVs are disappointingly smaller than the Chinese one, at the same time as they face a sharp increase in performance of the whole Chinese EV supply chain, from a plethora of appealing models to the batteries that power them.

It remains to be seen if the Western supply chain will be able to leverage the short-term protection of stiff import tariffs to catch up with this formidable Chinese competition.

References

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