

# *A Comparative Analysis of the Global Competitiveness of China's Electric Vehicle Industry and Germany's Traditional Automotive Industry*

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**Abstract:** With the growing trends in the market of electric vehicles (EV), this paper explores the competitiveness and development paths of China's EV industry versus Germany's traditional automotive industry in the global market. It analyzes the reasons behind China's rise in EVs, its technological innovations, and the challenges it faces, including low brand recognition and trade barriers. Germany's automotive sector, with its strong technology base and brand influence, has long led the global market but is under pressure during its transition to electrification. Meanwhile, China's EV industry has made significant advances in battery technology and smart connectivity, rapidly catching up to traditional automotive leaders. However, challenges such as international policy restrictions and trade barriers remain. The paper suggests that Chinese companies can address these challenges by strengthening international strategies, optimizing production networks, enhancing brand influence, and leveraging government cooperation and diplomacy to mitigate political risks. These insights offer valuable policy recommendations for the ongoing transformation of the global automotive industry.

**Keywords:** automotive industry, electrification transition, internationalization strategy

## **1. Introduction**

Automobiles have become an indispensable part of people's lives, either for public transportation or private use. As a quintessential product of cross-border industrial collaboration, the level of a nation's automotive industry can reflect its overall industrial capabilities to some extent. Europe, especially Germany, holds a pivotal position in the automotive market as the birthplace of automobiles. The advent of assembly line production solidified the United States' role in the automotive sector, while the oil crisis paved the way for Japan's emergence as a strong contender. For decades, these three countries or regions have dominated the global automotive market [1]. Despite China's vast automotive market and potential for growth, Chinese manufacturers have long struggled to produce competitive vehicles compared to their European and American rivals. However, the situation seems to be shifting. Over the past five to ten years, Chinese electric vehicles (EVs) have shown remarkable progress and now pose a significant threat to foreign competitors in the Chinese market [2]. Nevertheless, the path to exporting Chinese new energy vehicles (NEVs) is fraught with challenges, as de-globalization, trade protectionism, and unilateralism are on the rise. In contrast, German cars

can be found in virtually every corner of the world. This juxtaposition raises an important question of the future direction of China's NEV exports.

In the context of the evolving global automotive industry landscape, examining the export performance and strategies of China's electric vehicle manufactures and German traditional automakers is critical for understanding the future development trajectory of the industry and shifts in the global market structure. Existing research primarily focuses on technical details such as electronic control systems and market trends, or on analyzing the overseas market strategies of specific brands. Comparisons between the automotive industries of China and Germany, along with their respective international market conditions and policies, are relatively rare. With the growing global demand for low-carbon and environmentally friendly solutions, the transformation of the automotive industry has become an irreversible trend [3].

This research aims to compare their industrial structures, technological pathways, market strategies, and approaches to internationalization, analyzing the competitiveness of China's EV industry in the global market and exploring how Chinese automakers define their internationalization strategies. Studying the international market performance of China's EV industry and Germany's traditional automakers can deepen the understanding of the competitive advantages of the automotive industries in both countries. Additionally, it can provide policy recommendations and practical insights for the global automotive industry's transformation and upgrading. This research holds particular theoretical and practical significance against the backdrop of intensifying international trade tensions and the restructuring of global supply chains.

## **2. Comparison of the Automotive Industry in China and Germany**

China and Germany, as significant participants in the global automotive industry, have taken distinctly different development paths, which are primarily reflected in their origins and development stages, technological innovation and brand building, policy support and industrial environment, and market positioning and globalization strategies.

### **2.1. Origins and Development Stages**

In 1886, Karl Benz invented the world's first automotive, marking the birth of the modern automotive industry. Germany, at the end of the 19th century, was in the midst of the Second Industrial Revolution, with advances in mechanical engineering and chemical industries providing a strong industrial foundation for the automotive sector [4]. The subsequent establishment of brands like Mercedes-Benz, Bayerische Motoren Werke (BMW), and Volkswagen fueled Germany's automotive industry's rapid rise in the early 20th century, making Germany a global leader in car manufacturing.

In contrast, China's automotive industry, developed on later stage, only began in the 1950s. Initially, it relied heavily on technological assistance from the Soviet Union to produce vehicles primarily to meet domestic demand [5]. Through the introduction of foreign technology and joint ventures, China gradually mastered the core technologies of automotive manufacturing. Entering the 21st century, rapid economic growth and policy support spurred China's automotive industry to achieve exponential growth, with production and sales increasing rapidly.

However, in terms of critical technologies for traditional fuel vehicles, China remains dependent on foreign suppliers and has limited influence in technology development. Notably, China has made significant strides in the electrification transition, seemingly catching up with or even surpassing traditional automotive powers like Germany.

## 2.2. Technological Innovation and Brand Building

The development of any industrial product is inevitably linked to technological innovation, and automobiles are no exception. German manufactures have amassed extensive expertise in areas such as chassis design, vehicle handling, engine and transmission design and calibration, user interaction, and ergonomics, making it difficult for others to replicate or surpass. Additionally, Germany is home to major automotive technology suppliers such as Bosch, BorgWarner and Zahnradfabrik Friedrichshafen (ZF), known for their solid quality and cutting-edge innovations, earning a strong reputation and market position that facilitates the global promotion of their products [6]. However, in the realm of electric vehicles, German automakers have struggled to maintain their lead. Many have remained focused on their established market positions and have been hesitant in their transition to electrification.

In contrast, China's automotive industry has taken a different trajectory. In its early stages, China relied heavily on foreign technological support. With China's opening up to the world, foreign automakers entered the Chinese market through joint ventures, capturing a large market share. This led to inevitable technology spillover, allowing China to learn and even adapt technologies to suit its market needs. Leveraging technology spillovers and imports, China gradually developed its modern automotive industry. However, it remained predominantly positioned in the lower segments of the market, often tagged with "imitation" and "copying" and lacking strong brand recognition. A major shift occurred with the rise of electric vehicles, where China's robust supply chain and advanced smart technologies began to shine, particularly in areas such as battery technology and smart connectivity [7]. China successfully bypassed traditional European automakers' technological dominance and created new brands like NIO, Xpeng, and Li Auto, reshaping market perceptions of Chinese vehicles.

## 2.3. Policy Support and Industrial Environment

Germany's automotive industry is renowned globally, with its success partly attributed to government policies and a favorable industrial environment. The German government has consistently supported automotive research and development (R&D) activities by providing funding and encouraging technological innovation. For example, it has funded projects in electric vehicles, battery technologies, and autonomous driving to promote industrial upgrading. To further boost the adoption of new energy vehicles, Germany has implemented tax incentives. In September 2024, the German Cabinet approved tax reductions for electric vehicles, allowing companies to deduct 40% of the value of newly purchased electric and zero-emission vehicles in the first year, aiming to increase their adoption [8].

Nevertheless, the German automotive industry faces challenges such as high energy costs, taxes, labor expenses, and complex bureaucratic procedures, potentially weakening its competitiveness. The slower-than-expected promotion of electric vehicles has led to a decline in new electric vehicle registrations.

Interestingly, under the pressure from European Union (EU), Germany has rigorously enforced environmental regulations and set carbon dioxide emission targets for vehicles, pushing automakers to transition to clean energy [9]. The EU's announcement to ban the sale of fuel vehicles by 2035 has been a major blow to traditional manufacturers, although this ban may face delays.

In comparison, China's transition to electrification has been relatively easier due to fewer legacy burdens. China's success in the NEV market has also benefited from government support. In 2020, the Chinese State Council issued the "New Energy Vehicle Industry Development Plan (2021–2035)," outlining development goals and a roadmap for NEVs over the next 15 years, emphasizing technological innovation, industry ecosystem building, and infrastructure improvement. The government has provided purchase subsidies and implemented tax exemptions to lower consumer

costs and stimulate demand. It has also prioritized the development of charging stations and battery-swapping facilities, enhancing the convenience and support for NEV adoption.

## **2.4. Market Positioning and Globalization Strategies**

German automakers, with their long operational histories and extensive expertise, offer a wide range of products across different price segments and market positions. German manufacturers have established production bases worldwide to reduce costs and meet market demand, such as Volkswagen's factories in China and the US. By cooperating with local enterprises or forming joint ventures, German automakers adapt to local market needs and enhance their competitiveness, facilitating market penetration [6].

Chinese automakers also offer a diverse product range, from economy-class to high-end models, to meet the needs of various consumer groups. For example, brands such as BYD and Geely dominate the mid-to-low-end markets, while emerging brands like NIO and Li Auto focus on the premium electric vehicle market. Initially, Chinese automakers concentrated on meeting the vast domestic demand. As their technological capabilities grew, they began expanding into international markets, especially in electric vehicles, leveraging cost advantages and technological strengths to gradually enter developed markets like Europe. However, trade barriers and other factors pose challenges to China's globalization efforts, an issue which is focused in this paper.

## **3. Advantages of Chinese Automakers**

An initial understanding of some similarities and differences between the automotive industries of China and Germany can be gained through the previous discussion. This paper introduces an interesting perspective: the distinction between companies in the mature stage and those in the founder stage, in other words, the growth stage, when the founder of the company is still in control and willing to take flexible actions. Evidently, traditional German automakers are in the mature stage, while most of China's emerging manufacturers are still in the founder stage. The differing roles of these two types of companies have led to significant differences in their decision-making and development in today's rapidly changing market.

From a relatively macro perspective, when both Chinese and German companies face the decision of transitioning to electrification, German automakers tend to be hesitant. This is largely because these companies, already in the mature stage, have established relatively rigid methodologies in development, production and marketing. For them, making the shift to electrification is a decision fraught with uncertainty. With the immense inertia within these companies, this hesitation has caused delays and backwardness across the entire industry chain. In contrast, Chinese manufacturers in the founder stage have often focused on electrification and intelligence from the outset, allowing them to gain a first-mover advantage in the electric vehicle sector and drive the development of the local industry chain. As a result, when the market enters the era of electrification, the level of domestic production in China's automotive industry has risen, particularly in technologies like batteries and electric-drive system.

The marketing logic of traditional, mature automakers is generally based on the "purchase funnel," which progresses from top to bottom: awareness, familiarity, consideration, opinion formation, and purchase [10]. This was a model that worked well in the past. However, today, media channels have undergone a revolutionary change. The types and methods of media differ greatly from the traditional ones. Chinese automotive media, born in the internet age, are particularly adept at leveraging these online resources and media. This is not only a difference in communication methods but also allows for better dissemination at lower marketing costs. Chinese manufacturers have ample experience with the internet and can quickly and widely collect user feedback and improve products. The gap between

R&D teams and users has become increasingly smaller, allowing for rapid product iteration. In contrast, traditional, mature German automakers are at a significant disadvantage in this regard, partly due to outdated thinking and, for brand positioning reasons, reluctance to build such vertical communication channels. This further highlights the advantages of Chinese automotive products.

#### 4. Prospects and Suggestions

Although the Chinese automotive industry has some competitive advantages in the global market, in reality, Chinese EVs are facing significant challenges in their global expansion. These challenges include, but are not limited to, brand recognition, international market policies, regulatory barriers, and political factors.

Apart from the challenges and strategies businesses face in terms of commercial operations and product development, the more adverse factors today are trade barriers and international relations [11]. Many countries impose high tariffs and import barriers on foreign automotive brands, which results in higher costs for Chinese vehicles entering certain markets. For instance, the EU's tariffs on Chinese-imported cars increase the market competition pressure on Chinese automakers. Different countries and regions have stringent regulations and standards regarding vehicle safety, emissions, and environmental protection. Chinese automotive companies need to spend considerable time and resources to meet these certification standards, particularly in Europe, the US, and Japan. This undoubtedly increases the difficulty of global expansion.

To address these issues, this paper offers several suggestions. In the face of global trade uncertainties, companies should strengthen communication and cooperation with governments to secure favorable trade policies. This can be achieved through establishing overseas production bases, cooperative manufacturing, and other means to reduce the negative impacts of tariffs and policy restrictions. In response to global market demand, Chinese automotive companies could set up production bases in different regions to reduce transportation costs and tariff barriers, while ensuring production flexibility and cost competitiveness. For example, setting up manufacturing plants in Europe would meet local market demands. Companies should also establish long-term, stable partnerships with global suppliers to ensure a steady supply of key components, especially in the electric vehicle sector, where the supply of batteries and semiconductor chips is critical. Maintaining good relationships with foreign governments is also important, particularly when diplomatic and trade policies are frequently changing. Companies should use commercial diplomacy to mitigate political risks. This can be done by establishing public relations departments, participating in international business organizations and actively lobbying for favorable policies. By diversifying their international market presence, companies can avoid over-reliance on any single country or region, and expand into emerging and developing markets to reduce the impact of policy changes in a specific market. In addition, some Chinese industry professionals have proposed more dramatic ideas, such as reducing the import tariffs on foreign vehicles to zero in exchange for a favorable international market environment. However, the feasibility of such proposals remains to be evaluated.

#### 5. Conclusion

This paper examines the performance and development paths of China's EV industry and Germany's traditional automotive industry in the global market, focusing on technological innovation, market strategies, policy support, and internationalization. By comparing the two industries, the paper explores the reasons behind the rise of China's EV sector, the challenges faced by Germany's automotive industry, and the advantages and disadvantages of both in global competition. The study finds that Germany, with its strong technological foundation and brand influence, has long dominated the global market. However, traditional German automakers face significant pressure during the



transition to electric vehicles, with some companies hesitant to embrace this shift, slowing technological updates. In contrast, China's EV industry, with fewer legacy constraints, has rapidly advanced in areas like battery technology and smart connectivity.

Despite these technological achievements, China's EV industry faces challenges in global expansion, such as brand recognition, policy restrictions, and trade barriers. The paper suggests that Chinese companies can overcome these challenges by establishing overseas production bases, building long-term partnerships with global suppliers, and strengthening communication with governments. Additionally, companies should leverage diplomacy to mitigate political risks and diversify into emerging markets to reduce dependence on any single market. Overall, this paper provides valuable insights into the differences between the automotive industries of China and Germany, offering practical recommendations for both policymakers and business leaders.

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