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China's Automotive Surge: The Six 'S' Framework Underpinning China's Global Competitiveness

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Key Findings

Six Factors Behind China's Automotive Emergence: China's automotive emergence can be attributed to six reinforcing factors: the set up of its industrial architecture, supply chain maturity, rapid product development, domestic market saturation, government subsidies, and expanding sales.

- **Set Up:** China's automotive industry originated in the 1950s with state-owned enterprises. International automakers entered in the 1980s through joint ventures that facilitated technology transfer to the Chinese partners. Rapid market expansion in the 2000s established China as the world's largest automotive market, while electrification in the 2010s enabled Chinese automakers to emerge as global competitors.
- **Supply Chain:** A comprehensive and deliberate domestic supply chain, particularly for electric propulsion, has resulted in their dominance within the global automotive supply chain.
- **Speed:** Shared and common parts across organizations, speed within decision making, product development cycle compression, and higher launch risk tolerance have made speed a defining characteristic of China's automotive industry.
- **Saturation:** China's domestic automotive market has reached saturation, with production exceeding domestic sales and manufacturing capacity substantially exceeding production, leading to domestic reliance on global export expansion.
- **Subsidies:** Aggressive and pervasive domestic producer and consumer subsidies, along with non-monetary consumer incentives, have enabled China's broader industrial policy objectives.
- **Sales:** Chinese domestic automaker sales have scaled rapidly over the past five years, by gaining market share at the expense of all other regions and are on a trajectory to become the world leader in global sales.

Competitive Implications for North America: In order to quantify China's threat to the automotive industry, CAR conducted a comprehensive analysis to identify the underlying elements contributing to their intentional ascent to global automotive leadership. The purpose of this foundational research is to provide clarity for North American manufacturers and policy makers as they work towards a more resilient and competitive automotive industry.

Identifying the Six Factors Behind China's Automotive Surge

China's automotive industry has experienced explosive growth over the past decade. Its global emergence has disrupted long-standing competitive dynamics, assumptions concerning product development, coordination among stakeholders, and traditional propulsion systems. North American policymakers, automakers, and suppliers must understand the risks imposed by the rise of Chinese automaker production and innovation. The North American automotive industry is faced with competition from Chinese automakers in global markets, while suppliers face competition for contracts and programs.

Although the evolving Chinese industry undoubtedly presents a challenge to North America's domestic manufacturers, there is also opportunity to learn from its success. Evaluation and understanding of China's automotive ecosystem offer lessons on government coordination, disciplined industrial policy, manufacturing techniques, new product strategies, and innovative technologies.

China's automotive competitiveness is not driven by a single factor, but rather a combination of factors that are reshaping the global competitive landscape. CAR assessed the state of China's automotive industry and identified six reinforcing factors that underlie this growth, providing an unbiased and systematic understanding of China's automotive emergence. China's advantage is rooted in the **Set Up** of its industrial architecture and enabled by its matured and expansive **Supply Chain**, which is leveraged for **Speed** and rapid scaling. The result has been a **Saturation** in the market that is sustained through **Subsidies** and other forms of government support, allowing Chinese automaker **Sales** to grow both within China and through export globally.



Figure 1. The Six Factors of China's Automotive Competitiveness

Set Up

China's emergence as the world's largest automotive market, producer, and exporter was the result of a deliberate, decades-long strategy in which government policy, technology transfer, domestic scale, and electrification were leveraged to build a globally competitive automotive ecosystem.

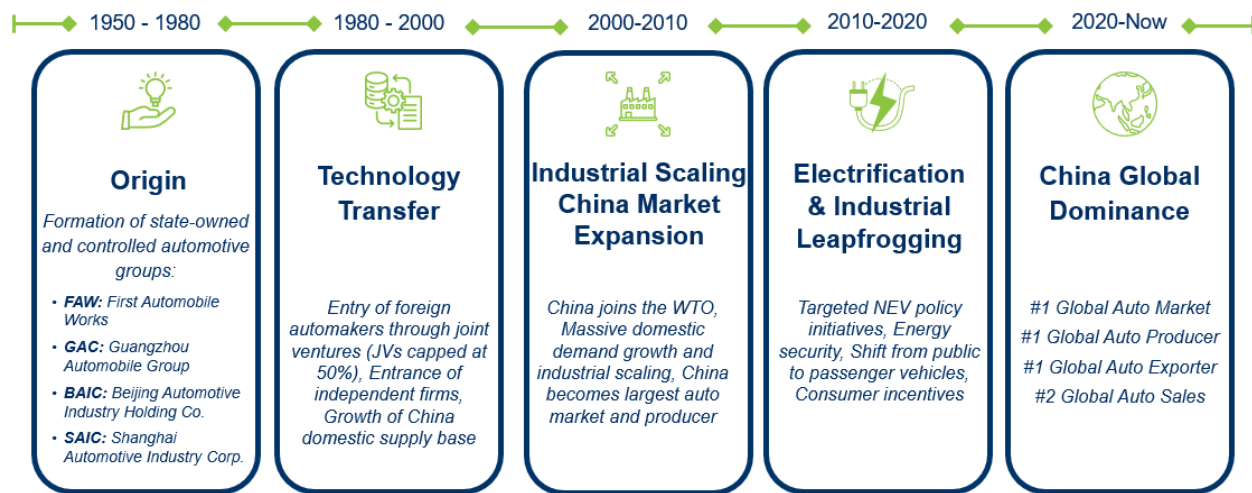


Figure 2. Phases of China's Automotive Industry

Origin: China's automotive industry began in the 1950s when China established four major state-owned automotive enterprises during the Maoist period. These included central government owned First Auto Works (FAW) in 1953 and the locally owned companies of Guangzhou Automobile Corporation (GAC) in 1955, Shanghai Automotive Industry Corporation (SAIC) in 1955, and Beijing Automotive Industry Corporation (BAIC) in 1958. These government created, owned, and operated companies continue today providing the backbone to the modern ecosystem¹.

Technology Transfer: Following liberalizing economic reforms under Chairman Deng Xiaoping between 1980 and 2000, foreign automakers entered the Chinese market through restrictive joint ventures that limited foreign partners' ownership to 50%. Technology transfer was an explicit requirement. Engineering expertise, manufacturing know-how, quality improvement systems, product development processes, and best practices were transferred to the Chinese domestic partners². These joint ventures also

¹[The metamorphosis of China's automotive industry \(1953-2001\): Inward internationalization, technological transfers and the making of a post-socialist market](#)

²[The metamorphosis of China's automotive industry \(1953-2001\): Inward internationalization, technological transfers and the making of a post-socialist market](#)

facilitated industrial upgrading of China's automotive workforce and supplier base³.

Industrial Scaling & Market Expansion: Joint ventures provided a foundation that enabled the rapid scaling of China's automotive production in the 2000s after China was accepted into the World Trade Organization (WTO) in 2001. By 2009, China became the world's largest domestic automotive market by volume, surpassing the United States, and becoming the largest auto-producing country. During the 2000s, electrification was identified as a key opportunity for China to leapfrog legacy automakers and reduce dependencies on oil imports⁴.

Electrification & Industrial Leapfrogging: Through the 2010s, coordinated through government policy and directives, China's automotive ecosystem was able to commercialize electrified vehicles, broadly referred to in China as New Energy Vehicles (NEVs). NEV subsidy and government programs began in 2009 focusing on public transportation before expanding throughout the 2010s to support passenger vehicles through a combination of producer subsidies and consumer purchase incentives. Notable policy initiatives that facilitated electrification and industrial leapfrogging included the *Cultivation and Development of Strategic Emerging Industries* (2010), *Made in China 2025* (2015), and *The Automobile Industry Mid- and Long-Term Development Plan* (2017)⁵.

Global Dominance: In the 2020s, China has expanded its lead as the world's largest domestic market and the world's largest automotive producer. In 2023, China surpassed Japan as the world's largest automotive exporter, achieving another major milestone⁶. Furthermore, China has emerged as the leader in electrified vehicle sales. Chinese automaker total sales are now set to surpass those headquarters in Japan. Based on CAR's analysis, the number of active Chinese automakers increased from 47 domestic automakers in 2015, peaking at 74 firms in 2019, and declined modestly to 68 firms in 2025. There have been limited signs of continued consolidation of Chinese automakers since 2020⁷.

³[Quid Pro Quo, Knowledge Spillover, and Industrial Quality Upgrading: Evidence from the Chinese Auto Industry](#)

⁴[Development Plan for Energy-Saving and New Energy Vehicle Industry \(2012 – 2020\)](#)

⁵Based on policy summaries from the Center for Strategic and International Studies, The US-China Business Council, and the International Energy Agency

⁶New York Times '[How China Became the World's Largest Car Exporter](#)'

⁷CAR analysis of Global Data 'Light Vehicle Global sales History'. Brand sales were consolidated based on ownership group and ownership group country classification determined by headquarter location

Supply Chain

The growth of China's automotive industry has been enabled by advancements and industrial upgrading within their domestic supply chain. Although this growth spans both internal combustion engines (ICE) and electric vehicles (EV), China's competitive advantages within the EV supply chain are particularly pronounced. China's automotive system possesses a near complete domestic supply chain for the electric powertrain; providing it long-term independence, enabling innovation, and generating dependencies on Chinese component manufacturing among competitor ecosystems.

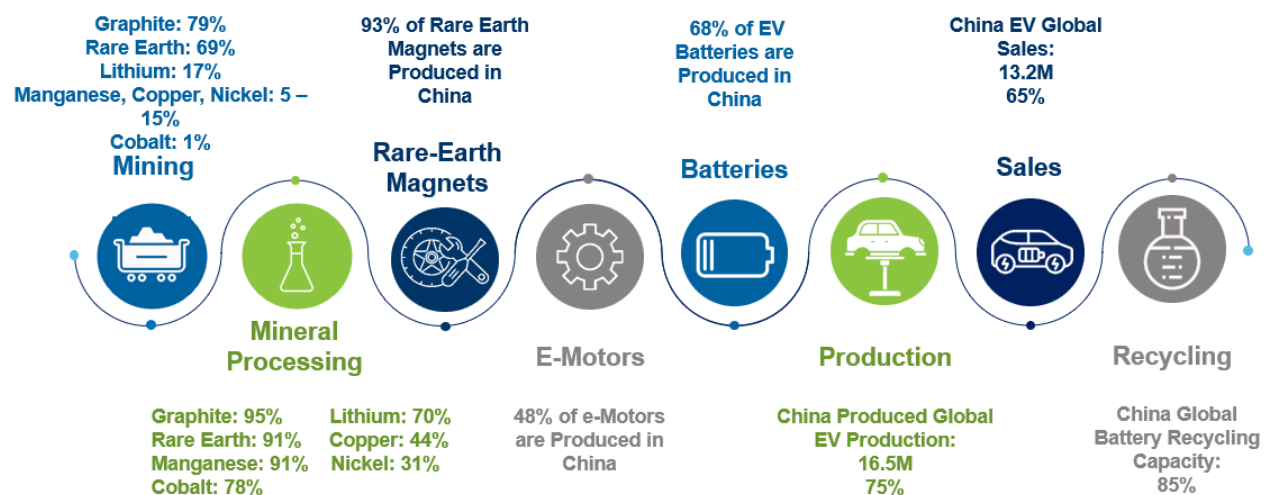


Figure 3: Electric Vehicle Supply Chain

Starting from battery-related raw materials, China holds a massive lead in graphite and rare earth mining with 79%⁸ and 69%⁹ market share in 2024 and 2023 respectively. China does not, however, possess a lead in other mining of raw materials including lithium, manganese, copper, nickel, and cobalt, with China's market shares for these materials limited to below 17% in 2024¹⁰. However, when evaluating the processing of these minerals China holds massive market shares. As of 2024, China holds 91% of Manganese processing, 78% of cobalt processing, 70% of lithium processing, 44% of copper processing, and 31% of nickel processing. The lead for graphite and rare earth processing extends to 95% and 91% respectively¹¹.

⁸United States Geological Survey 'Mineral Commodity Summaries 2025'

⁹Natural Resources Canada 'Rare Earth Element Facts'

¹⁰Natural Resources Canada 'Lithium Facts', 'Copper Facts', 'Nickel Facts', 'Cobalt Facts'

¹¹International Energy Agency 'Global Critical Minerals Outlook 2025 – Analysis - IEA'

These upstream strengths translate directly into the downstream production of batteries with China producing 68% of EV batteries in 2025¹². Beyond EV batteries, China leads in the production of electric motors with 48% in 2025 and 93% of the rare earth magnets that enable electric motors¹³. The country is positioned well for the next stage of the EV value-chain, possessing 85% of global battery recycling capacity¹⁴. China's leadership in the EV supply chain ultimately provides global leverage over commodity pricing and enables export controls.

Recent trends in exports from China reveal the growing competitiveness of Chinese autos, particularly for NEVs. Total exports from the first quarter of 2024 to the first quarter of 2026 have risen by nearly a million vehicles, constituting a 69% increase. NEV exports have surged as a percentage of exports over this same period, nearly doubling from 23% to 43%. ICE exports have only risen 25% while NEV exports have risen 211%, a tripling of totals in just two years¹⁵.

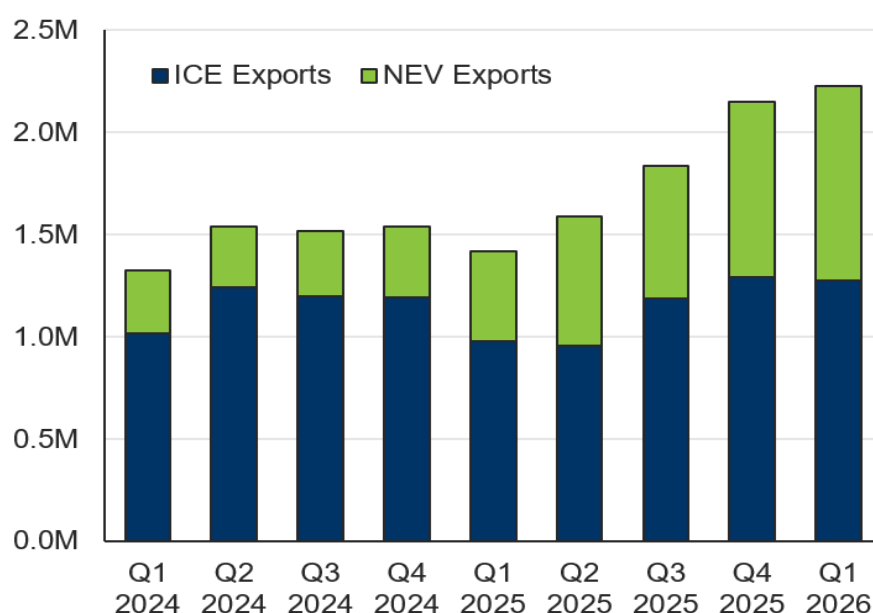


Figure 4. Passenger Vehicle Exports by Powertrain from China

¹²CAR analysis of Global Data 'Powertrain Fitment Forecast'

¹³Center for Strategic and International Studies '[China's New Rare Earth and Magnet Restrictions Threaten U.S. Defense Supply Chains](#)'

¹⁴Benchmark Minerals '[How much of the battery recycling industry does China control?](#)'

¹⁵CAR analysis of China Association of Automobile Manufacturers data

Speed

Speed has become a defining characteristic of China's automotive industry, enabled by shorter development cycles, faster decision-making, extensive platform reuse, shared components, and broader industry ecosystem characteristics. Differentiating vehicle architectures and platform development between automakers is critical to comparing product development cycle timing.

During the concept stage, Chinese automakers often use existing electric vehicle architectures, software stacks, and battery systems¹⁶. In sourcing and design, Chinese automakers leverage strong automaker-supplier relationships with suppliers brought in early for product development. Additionally, automakers utilize common components and standards and employ efficient quote-to-shelf schemes¹⁷.

Development and launch timelines are quickened through parallel development and the use of simulation tools for product validation¹⁸. Launch timelines are further supported by a highly integrated data ecosystem which facilitates rapid feedback from customers and permits over-the-air software updates¹⁹. While none of these concepts are new to legacy automakers, Chinese automakers have leveraged all of these strategies with discipline and expedited decision making to quicken speed to market.

Rapid product development in China is additionally enabled through industry ecosystem characteristics. Government funding is generous and industrial policy is designed to encourage innovation through specialized industrial clusters and competition amongst provincially backed companies²⁰. A massive skilled workforce with extended work schedules output. For example, many Chinese automakers deploy 9-9-6 work schedules where employees work from 9 a.m. to 9 p.m. six days a week²¹. China's extraordinarily

¹⁶Based on Robert Cooper '[China Speed: Accelerated Product Development the Chinese Way](#)' and McKinsey & Company '[Automotive product development: Accelerating to new horizons](#)'

¹⁷Based on U.S. International Trade Commission '[Working Paper ID-060](#)', Reuters '[How China's new auto giants left GM, VW and Tesla in the dust](#)' and information from Caresoft Global

¹⁸Based on Financial Times '[VW says it can halve EV development costs with 'Made in China' car](#)' and Reuters '[How China's new auto giants left GM, VW and Tesla in the dust](#)'

¹⁹Based on Research and Markets Report: 'China and Global Smart Car OTA industry Report 2025-2026'

²⁰Based on [Manufacturing Competency from Local Clusters: Roots of the Competitive Advantage of the Chinese Electric Vehicle Battery Industry](#), [Competition and Coordination: Regional Dynamics in the Rise of China's New Energy Vehicle Industry](#), and [The Rise of China's Electric Vehicle Industry: Strategic Alliances Between Local Governments and Private Capital](#)

²¹Car News China '[Chery enforces an 896 culture and the employees are not happy about it](#)'

competitive domestic market further necessitates quick speed-to-market and constant improvement²².

Saturation

China's automotive industry has reached a point of saturation, with production capacity exceeding domestic demand, creating pressure to expand exports to absorb excess production and prevent underutilization of workforce and installed capacity. In 2020, production and sales in China were aligned at approximately 23 million

vehicles. Over the past 5 years, however, production has rapidly outpaced domestic sales with production exceeding sales by 6.2 million units.

Furthermore, capacity has scaled well beyond domestic demand, growing from just below 40 million in 2021 to 48.5 million in 2025. Capacity utilization has increased modestly over this period, rising from 61% to 68%, culminating in approximately 15 million in excess capacity in 2025²³.

Market saturation has contributed to the international expansion of Chinese automaker sales²⁴ beyond the China's domestic market. From 2020 to 2025, sales from Chinese automakers have doubled in North America, driven by sales in Mexico, and have tripled in Western Europe. The greatest growth occurred in markets outside North America and Western Europe with sales volume increasing sevenfold²⁵.

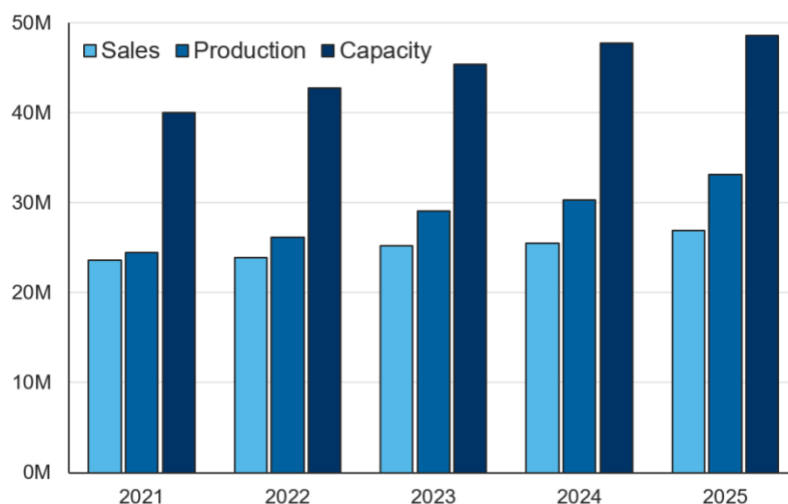


Figure 5. China's Automotive Domestic Sales, Production, and Capacity

²²International Energy Agency '[What Next for the Global Car Industry?](#)' and Gasgoo Media '[What Powers the Deep Foundations of China's Automotive Rise?](#)'

²³CAR analysis of Global Data 'Plant Analysis'. Capacity utilization is defined as the ratio of production to capacity and reported as a percentage

²⁴Polestar, Volvo, Lotus, and MG are included as Chinese automaker sales due to ownership by Chinese automotive groups

²⁵CAR analysis of Global Data 'Light Vehicle Global Sales History'

Subsidies

The global automotive industry operates on an uneven competitive playing field. China's automakers receive substantially greater subsidies than counterparts in Asia, Europe, and North America. Furthermore, China's framework enables sustained hyper-competition, prioritizing scale, market share, and jobs over near-term profitability. Over the past decade Chinese automakers have received a far greater total amount of subsidies relative to revenues. As of 2024, average subsidies totaled 2.72% of annual revenue, while North American firms received 0.93%, the rest of Asia 0.39%, and Europe 0.34%²⁶.

China's automotive industry has received other in-kind support in the forms of below-market electricity and land from local governments. The NEV sector has also received support in the form of consumer purchase subsidies, with nearly \$130 billion in NEV purchase subsidies from 2020 through 2025, and non-monetary government support, such as expediting NEV license plates relative to ICE plates²⁷.

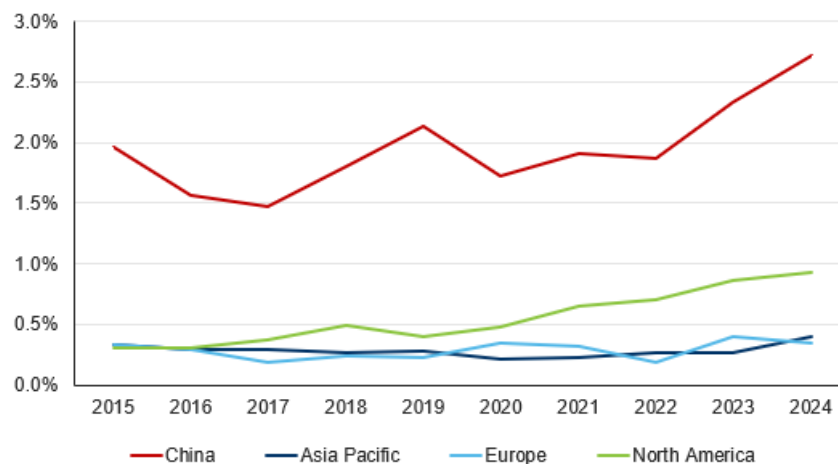


Figure 6. Average Subsidy Share of Revenue by Automaker Origin

Sales

Chinese automaker sales are growing faster than the rest of the industry, taking share both in China and globally, as North American consumers show increasing acceptance of Chinese vehicles. Chinese automaker total sales are up 101% since 2020, constituting a doubling over five years. All other global

²⁶Organization for Economic Co-operation and Development '[MAGIC Database of Industrial Subsidies](#)'. Subsidies include government grants, tax concessions, and below market credit

²⁷International Energy Agency '[Global EV Outlook 2026 – Analysis - IEA](#)'

automakers combined, however, are only up a mere 7% over the same five-year period.

China's domestic market has shifted from predominantly foreign brand sales to predominately Chinese domestic automaker sales. Chinese automaker domestic market share has risen from 43% in 2020 to 67% in 2025. Automakers originating from Western Europe, United States, and East Asia (excluding China) have all lost market share in China.

Chinese automaker global market share has grown as well, rising from 14% in 2020 to 25% in 2025, narrowing the gap with Japanese automakers, which remained the global market share leader at 26% in 2025. Globally, automakers from Western Europe, Japan, and the United States have all lost market share, with only South Korean automakers maintaining at 8% global market share from 2020 to 2025.

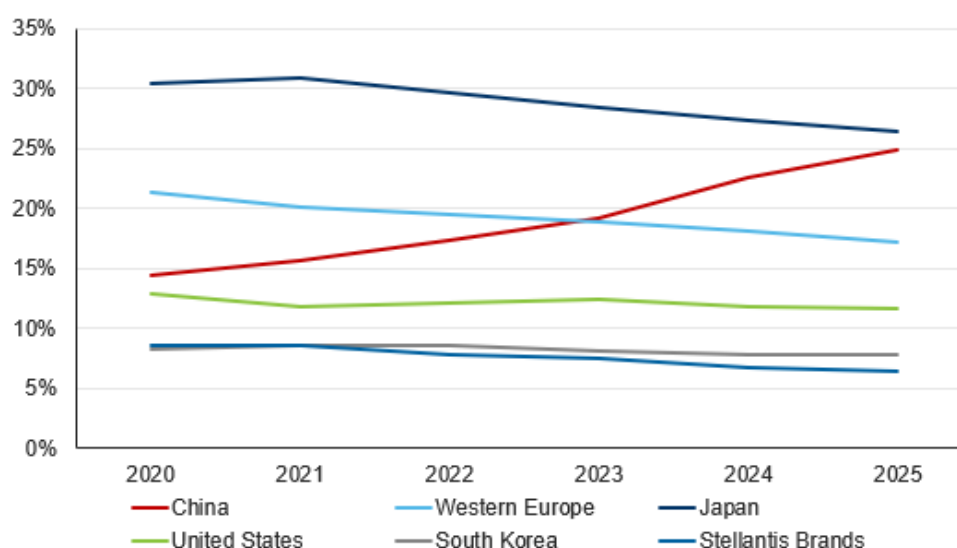


Figure 7. Global Market Share by Automaker Region of Origin

In North America, Chinese automakers have made significant in-roads, growing from 127,000 in 2020 to 370,000 in 2025. The growth in Mexico has been particularly significant, with Chinese automakers market share rising from less than 1% in 2020 to 14.5% in 2025²⁸.

Conclusion

CAR identified six reinforcing factors underlying China's automotive competitiveness: setup, supply chain, speed, saturation, subsidies, and sales;

²⁸CAR analysis of Global Data 'Light Vehicle Global Sales History'

supported by sustained coordination among government institutions and industry stakeholders. These factors have produced an automotive ecosystem capable of dominating across vehicle segments and global markets.

This foundational analysis is part of CAR's broader effort to provide industry stakeholders with independent research and actionable insights to help navigate the competitive challenges posed by China's automotive industry. CAR is committed to inform and assist decision-making through industry partnership, independent research, thought-leadership, scenario planning, and economic impact analysis.

About the Authors

The Center for Automotive Research (CAR) is an independent, non-profit organization conducting industry-driven research and analysis. Focusing on critical areas including Technology, Manufacturing, Energy & Sustainability, and Labor, Economics & Policy, CAR has been a trusted resource for the automotive industry for over twenty years.

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