Toward an Automotive Power: Recommendations on the Medium and Long-Term Development Plan for the Automotive Industry (Postprint)

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Abstract

[Purpose/Significance] Following the promulgation of the Medium and Long-Term Development Plan for the Automotive Industry, China' s automotive industry is confronted with new development opportunities while simultaneously giving rise to novel challenges internally, as traditional sectors undergo reshuffling and industrial repositioning. This paper seeks to explore the industry' s vulnerabilities and future development trajectories.

[Method/Process] Through examination and analysis of vulnerable segments including automotive manufacturing, complete vehicle brands, industry standardization, and green development, a feasibility analysis is conducted concerning future branding and indigenization within the automotive sector.

[Results/Conclusions] The study develops arguments pertaining to government policies, industrial clustering, and service industry development, and proposes recommendations incorporating the author' s viewpoints.

Full Text

Moving Towards an Automotive Powerhouse—Some Suggestions on the Medium and Long-Term Development Plan for the Automobile Industry

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Abstract: [Purpose/Significance] Following the promulgation of the Medium and Long-Term Development Plan for the Automobile Industry, China's automotive sector faces both new development opportunities and emerging challenges, with traditional industries undergoing reshuffling and repositioning. This paper examines the industry' s weaknesses and future development directions. [Method/Process] Through analysis of vulnerabilities in automotive manufacturing, integrated branding, industry standards, and green development, the paper conducts a feasibility analysis on future brand development and autonomy in the automotive industry. [Result/Conclusion] The paper presents arguments concerning government policy, industrial clustering, and service industry development, and offers recommendations based on the author' s perspectives.

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Recently, the Medium and Long-Term Development Plan for the Automobile Industry (hereinafter referred to as "the Plan")—long anticipated by Chinese automotive industry entrepreneurs and scholars—was officially released [1]. Jointly formulated by the Ministry of Industry and Information Technology, the National Development and Reform Commission, and the Ministry of Science and Technology [2], it is undoubtedly a programmatic document that will guide China' s transformation from a major automotive country to an automotive powerhouse over the next decade. The Plan will effectively steer China' s automotive industry in meeting the challenges of the global technological revolution and achieving successful transformation and rapid development. To ensure these objectives are met, the author offers several preliminary observations on the Plan.

1 The Important Guiding Significance of the Plan

1.1 Distinct Targeting

Currently, a technological revolution centered on new energy vehicles and intelligent connectivity is sweeping the global automotive industry with unprecedented momentum, representing a once-in-a-century upsurge. To meet this surging tide of global technological revolution, China must not only enable its automotive industry to become a "pioneer riding the wave" but also seize opportunities effectively to accelerate its development. Particularly amid this revolution, top-level design must be strengthened to address numerous issues that require government leadership, guidance, assistance, and support. Accordingly,

following the formulation of various industry-specific 13th Five-Year Development Plans at the end of last year and beginning of this year, the government has introduced the Medium and Long-Term Development Plan for the Automobile Industry. Notably, this is a medium- and long-term plan, signifying that effective response to the challenges posed by technological revolution requires joint action by the three ministries, medium- and long-term strategic thinking, comprehensive planning, resource allocation, and coordinated efforts to overcome difficulties and achieve substantial progress toward the major upgrading of China' s automotive industry.

1.2 Strategic Objectives for Transformation

During the 13th Five-Year Plan period and beyond, China' s primary strategic objective for its automotive industry is to transform from "large" to "strong." The Plan explicitly states: "Through ten years of sustained effort, strive to enter the ranks of global automotive powers." Under this overarching goal, the Plan proposes specific strategic objectives: achieving major breakthroughs in key technologies and establishing secure, controllable industrial chains. Furthermore, the Plan identifies five strategic objectives that reflect both China' s urgent priorities and the thresholds it must cross to become an automotive powerhouse, while also addressing how the industry should evolve amid the new technological revolution: comprehensive development of Chinese automotive brands; basic formation of a new industrial ecosystem; significantly enhanced international development capabilities; and substantially improved green development levels.

1.3 Guiding Principles

"Innovation-driven, focused breakthroughs; coordinated development, win-win cooperation; market-led, government-guided; open and inclusive, competitive yet collaborative development." These four principles, proposed by the government based on the current state of automotive industry development and the domestic and international environment, provide guidance for formulating industrial policies, steering technological innovation, and furthering reform and opening-up amid the technological revolution.

1.4 Specific Technical Pathways

The Plan comprehensively considers the profound changes likely to arise from future technological revolutions and proposes specific technical pathways to address anticipated challenges, introducing many novel concepts and formulations. For instance, it first proposes a stepwise approach for intelligent connected vehicles: "By 2020, the installation rate of DA (Driver Assistance), PA (Partial Automation), and CA (Conditional Automation) systems in new vehicles will exceed 50%, with networked driver assistance systems reaching 10%, meeting the needs of smart transportation city construction. By 2025, the installation rate of DA, PA, and CA systems in new vehicles will reach 80%, with PA and

CA-level systems accounting for 25%, and highly and fully automated vehicles will begin entering the market." This merits close attention from both China' s and the global automotive industries.

2 Challenges in Implementing the Plan

China' s automotive industry faces severe challenges in achieving the Plan' s objectives within approximately ten years [3]. Compared with developed countries, China's automotive industry still exhibits numerous weaknesses and deficiencies:

2.1 Weakness in Key Technologies and Components

In the traditional automotive sector, Chinese enterprises and research institutions have recently achieved encouraging breakthroughs in key technologies and components such as engines and transmissions, yet significant gaps remain compared with advanced levels in developed countries. In new energy technology, China' s automotive industry and related sectors have made considerable progress in batteries, motors, and electronic control systems, but still lag behind their counterparts in the US, Europe, and Japan. The gap is particularly pronounced in power batteries: compared with Japanese and Korean products, Chinese batteries suffer from higher costs, lower energy density, backward production processes and automation levels, and poor consistency assurance. In next-generation advanced battery systems and materials development, the gap with international advanced levels is evident, and fuel cell industrialization also trails international standards. Currently, China has yet to produce a globally influential automotive enterprise.

2.2 Poor Full-Chain Security and Controllability

Due to weaknesses in key technologies and components, China' s automotive industry lacks secure and controllable full-chain capabilities in developing both traditional and new energy vehicles. While the traditional vehicle sector has seen welcome changes—with independently developed sedans entering the market and achieving notable success, even challenging the mid-range sedan segment—these accomplishments rely heavily on foreign automotive design and development companies or foreign expertise. Chinese enterprises still lack core competitiveness in vehicle design and tuning. In the new energy vehicle sector, certain key components and raw materials remain dependent on multinational corporations. Although some new technologies have been mastered, industrialization lags, resulting in continued heavy reliance on foreign-supplied batteries and other components in actual production vehicles.

2.3 Chinese Brands Awaiting Comprehensive Breakthrough

As the Plan notes, "Chinese brands are growing rapidly, with gradually improving international development capabilities, particularly gaining competitive advantages in market segments such as commercial vehicles and sport utility

vehicles in recent years." While Chinese automotive brands have begun demonstrating international competitiveness in certain areas, they remain in a difficult breakthrough phase in the sedan market, especially mid- to high-end sedans, making brand breakthrough a formidable long-term task. Even in the domestic market, considerable effort is still required for independently developed Chinese sedan products to gain recognition and reputation.

2.4 New Industrial Ecosystem Yet to Form

Against the backdrop of the new technological revolution, the reorganization and formation of the automotive industrial ecosystem represents a monumental transformation—a process of reconstituting and adjusting industrial chains. In this profound transformation, timely response from the automotive industry alone is insufficient; coordinated action from related industries is essential to secure competitive advantages. From China' s current perspective, technological innovation outside the automotive sector is active but chaotic and lacks coordination. Taking technical standards as an example, both new energy vehicles and intelligent connectivity suffer from fragmented governance and industry segmentation. For instance, due to poor coordination and inadequate policy alignment, progress in the reuse of retired batteries from new energy vehicles has been slow, and the timely promotion of this work has become a critical issue affecting the development of new energy vehicles.

2.5 Weak International Development Capabilities

China's complete vehicle exports have yet to recover after falling from their peak of 1 million units, fully demonstrating the weak international competitiveness of Chinese automotive enterprises. While Chinese companies have made considerable progress in overseas investment and plant construction in recent years, these efforts largely involve establishing CKD (Completely Knocked Down) assembly plants abroad to circumvent tariff barriers. The history of automotive industry development shows that all automotive powers are major export countries, and all global automotive enterprises feature global layout and sales. China' s automotive industry still faces a long road ahead in this regard.

2.6 Green Development Levels Require Improvement

China' s automotive industry has made notable progress in green development and environmental friendliness in recent years, with rapid advances in energy conservation and emission reduction during production. However, progress in recycling used automotive products and components has been limited, and in the new energy vehicle sector, recycling of used products has only just begun to be planned.

The issues identified above correspond directly to the objectives outlined in the Plan, demonstrating that it has captured the main directions for future automotive industry efforts.

3 Policy Recommendations

3.1 Strengthen Inter-Agency Policy Coordination

The technological revolution unfolding in the automotive industry has far exceeded the traditional boundaries of the sector, necessitating cross-agency coordination in policy formulation. For example, the Interim Measures for the Parallel Management of Corporate Average Fuel Consumption and New Energy Vehicle Credits and the New Energy Vehicle Carbon Quota Management Measures currently being developed by relevant authorities concern the overall development of new energy vehicles and require close cross-agency coordination for effective implementation. Similarly, intelligent connected vehicles···

3.2 Government Policies Should Be Effective Yet Flexible

The new technological revolution in the automotive industry is still in its ascendancy and represents a lengthy process unlikely to conclude within ten years. Throughout this process, technological changes will emerge continuously, and technical pathways remain uncertain. This requires government policy to focus on public domains with clear trends and avoid excessive or deep intervention in market processes. For example, which type of new energy vehicle will become mainstream remains unclear, in the author' s view. Government policies must therefore maintain sufficient flexibility to adjust promptly according to technological and market changes, leaving adequate "room for trial and error" and "space for innovation" to allow different technical pathways and innovation outcomes to be tested in the market [1].

3.3 Guide and Encourage New Industrial Clustering

The production and operation of new energy and intelligent connected vehicles require close cooperation not only from traditional automotive enterprises but also from relevant companies in other industries, making the formation of new industrial clusters critically important. While the government can guide the formation of these new clusters, enterprises should play the leading role. The new clustering patterns may differ from traditional automotive industry configurations, likely combining virtual and physical spaces as well as online and offline integration.

3.4 Prioritize Development of Key Automotive Components

The Plan pays considerable attention to the automotive components industry. In the new technological revolution, this sector faces radical changes, most notably that many key components, technologies, and raw materials are supplied by enterprises outside the traditional automotive industry. The automotive industry confronts restructuring and monumental transformation. The Plan proposes: advancing coordinated and efficient full-chain development; building new "vehicle-component" partnerships; exploring and optimizing cost-sharing

and benefit-sharing mechanisms in industrial technology innovation alliances; encouraging deep cooperation between leading vehicle manufacturers and superior component enterprises in R&D and procurement; and establishing a secure and controllable key component supply system. The proposal for new "vehicle-component" partnerships reflects the government's profound understanding of the new technological revolution.

The Plan states: "Achieve secure and controllable full industrial chains. Break through bottlenecks in advanced automotive electronics such as vehicle sensors and onboard chips, lightweight new materials, and high-end manufacturing equipment; cultivate internationally competitive component suppliers; and form a complete industrial system from components to complete vehicles." Full-chain controllability highlights the importance of core automotive components, identifies the threshold China must cross to become an automotive powerhouse, and emphasizes the industrial security system that an automotive power should possess.

The author wishes to stress that the importance of the automotive components industry has been emphasized repeatedly throughout China's automotive development history, yet concrete implementation measures have always been lacking. Component development has seriously lagged behind complete vehicle development, becoming a major challenge for China's automotive industry. If this problem cannot be resolved in the new automotive technology revolution, the transformation from large to strong will be difficult to achieve. It is hoped that this Plan can promote the introduction of relevant policies and measures to ensure genuine implementation. The Plan provides extensive discussion on organizing technological breakthroughs in components but lacks economic incentives and safeguards in fiscal and tax policies, which should be strengthened.

3.5 Emphasize Development of Automotive Service Industries

New energy and intelligent connected vehicles will inevitably give rise to new automotive service business models, which will largely determine the success or failure of industrial transformation. For example, electric vehicle time-sharing rental provides certain competitive advantages for local automotive enterprises. Therefore, when promoting the transformation and development of the automotive industry, it is essential to pay attention to the simultaneous transformation and development of automotive service industries and encourage the emergence of new business models.

3.6 Gradually Lift Joint Venture Equity Restrictions and Deepen Opening-Up

The Plan proposes "improving domestic and foreign investment management systems and gradually lifting equity ratio restrictions for joint ventures." This is a carefully considered and prudent formulation that responds to calls for lifting equity restrictions, aligns with the internationalization requirements proposed in

the Plan, and tailors implementation to national conditions and the state of the automotive industry. Lifting equity restrictions should not be done indiscriminately but rather gradually according to actual needs. The author interprets "gradually" as meaning step-by-step, differentiated, and strategic liberalization based on the condition of the automotive industry [2]. For instance, the author has repeatedly called for opening state-owned enterprise equity ratios to domestic private capital first when promoting mixed-ownership reforms. Equity liberalization should initially occur among domestic enterprises: between state-owned enterprises, between state-owned and joint-stock enterprises, and between state-owned and private enterprises. Relevant policies should currently be formulated to accelerate the process of lifting equity restrictions. It must be emphasized that different enterprises have their own strategic and profit considerations, and the government should not overstep its bounds [3].

The government should accelerate the disposal of "zombie"enterprises to promote structural adjustment in the automotive industry. In the new energy vehicle sector, building new joint ventures should not be overly encouraged to prevent another joint venture boom during new energy vehicle development.

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Note: Figure translations are in progress. See original paper for figures.