Proceedings of ICFTBA 2026 Symposium: Driving Organizational Strategic Change for Financial Gains
DOI: 10.54254/2754-1169/2026.BH39196

Analysis of the Current Development Status, Causes, Dilemmas, and Governance Paths of Price Wars in the New Energy Vehicle Industry

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Abstract. China's new energy vehicle (NEV) industry, after rapid expansion, is confronted with the predicament of growing output alongside squeezed profits. Its industrial profit margin dropped to 4.1% in 2025, a ten-year low, while vehicle manufacturing margins shrank to 1.5% in H1 2026. Price cuts launched by leading enterprises set off a chain reaction, trapping the sector in a prisoner's dilemma. This paper reviews NEV price competition and identifies its regional, continuous, transmissive and multi-dimensional evolutionary features. Drawing on the prisoner's dilemma game model and the "policy-technology-market" triple lock-in mechanism, it argues that the price war arises from firm gaming and institutional lock-in rather than supply-demand imbalance. A three-stage governance framework is put forward: short-term market regulation, medium-term unlocking of development paths, and long-term shift toward value-based competition. The study concludes that the industry can escape the price competition trap only by replacing price competition with value competition, supported by technological innovation, institutional improvement and global layout.

Keywords: New energy vehicles, A price war, The prisoner's dilemma, Inwinding competition, Industrial policy

1. Introduction

In recent years, China's new energy vehicle industry has achieved rapid development. According to the data of China Automobile Association, in 2025, China's automobile production and sales were 34.531 million and 34.4 million respectively, and the production and sales of new energy vehicles were 16.626 million and 16.49 million respectively. The sales volume of new energy vehicles will accounted for 47.9% of the total sales volume of new vehicles [1]. However, the continued rise in sales is in sharp contrast to the sustained deterioration in industry profitability. According to the National Bureau of Statistics, the profit margin of China's auto industry remained at a reasonable level of 8% until 2017, and has fallen year by year since then. In 2025, the profit margin of the entire industry fell to 4.1%, the lowest level since 2015 and lower than the average profit margins of the manufacturing sector (5%) and the equipment manufacturing sector (5.5%) [2]. In 2026, the profit pressure is further increased. In the first half of 2026, the profit margin of vehicle

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DOI: 10.54254/2754-1169/2026.BH39196

manufacturing is only 1.5%, down 2.6 percentage points from 4.1% in 2025, hitting the lowest in nearly a decade [2]. This phenomenon of "volume and price deviation" shows that China's new energy vehicle industry is falling into the growth dilemma of "increasing production without increasing income, increasing income without increasing profit."

At present, the price cutting trend of the leading enterprises in the industry is forcing other automobile enterprises to maintain the existing share or strive for short-term performance by way of price cutting, constituting a typical "prisoner's dilemma" [3]. Involutionary competition stems from firms' prisoner's-dilemma price wars, difficulties in realizing economies of scale, and excessive local government protection [3]. If low-price competition continues for a long time, the industry itself and all links will be difficult to obtain normal profits and development power. China is the country with the largest sales volume and the largest market of new energy vehicles in the world. In January 2026, the Ministry of Industry and Information Technology, the National Development and Reform Commission and the State Administration for Market Regulation jointly held a symposium for enterprises in the new energy vehicle industry, clearly proposed to "resolutely resist disorderly price war" and required to promote the construction of a market order of "high quality, competitive price and fair competition" [4]. In terms of research methods, this paper mainly uses a literature review to synthesize relevant academic findings as its theoretical basis and a comparative analysis to examine differences in competition under different circumstances. In this context, this paper studies the price competition in the new energy vehicle industry, which can provide feasible reference ideas for relevant departments to adjust industrial policies and help auto companies get out of the low-price dilemma. This paper is divided into three parts: development status and evolution characteristics, formation mechanism and industry development dilemma, governance path and conclusion.

2. Development status and evolution characteristics of price competition in the new energy vehicle industry

2.1. The evolution of price war

The price competition in the new energy vehicle industry has experienced an upgrading process from germination to deepening, and the quantitative indicators at each stage can intuitively present this trend. In the budding period (2023), Tesla took the lead in lowering prices, triggering the first round of price war. About 148 models were discounted that year, and average NEV transaction prices fell by approximately 1%–3% compared with 2022 [5]. Relevant studies take Tesla's price reduction as the entry point, and analyze the causes of price reduction and the coping strategies of BYD, XPeng and other automobile companies from a long-term perspective. At this stage, the number of discounted models was limited, and price competition remained exploratory and localized. In the outbreak period (2024-2025), price wars evolved from accidental behavior to industry norm. In 2024, 227 models were discounted; the average NEV price fell by 18,000 yuan, or 9.2%. In 2025, 177 models were discounted, and the average price reduction rose to 21,000 yuan, with the reduction rate expanding to 11% [5]. BYD and other leading enterprises frequently launched the pricing offensive of "lower electricity than oil", and the price war quickly spread from the low-end market to the middle and high-end market.It has been pointed out that technology homology leads to product homogeneity and forces the normalization of price competition, and disruptive innovation leads to the pattern reconstruction of old and new automobile enterprises and exacerbates the imbalance between supply and demand [6]. In the deepening period (2026 to present), the price war has entered a new stage. Tesla China officially announced the price reduction of Model 3 and Model Y; The guide price of SAIC Audi A7L decreased from 418,700 yuan to

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262,800 yuan, a direct decrease of 155,900 yuan [7]. It is worth noting that the driving effect of price reduction has begun to weaken significantly, and the market has appeared structural differentiation -- the price war in the low-end market is difficult to sustain, while the value competition in the high-end market is rising. This indicates that price competition is shifting from pure price competition to deep-level structural adjustment.

2.2. Market performance characteristics of price competition

The market performance brought about by price competition presents three differentiated features that deserve attention. The price reduction range has spread from the low-end market to the middle and high-end market, involving nearly all major automakers. Some models are even offered at discounts of up to 60% off their list prices [7]. The market structure is subsequently differentiated: the price war in the low-end market is difficult to sustain, while the value competition in the high-end market is rising, and the independent brands in the new energy vehicle market of more than 400,000 yuan have occupied 59% of the share [7]. At the same time, the pressure of the industrial chain is transmitted layer by layer, spreading from OEMs to upstream parts suppliers and downstream dealers, forming systematic pressure. The continuous divergence between sales volume and profit constitutes the macro background of the above characteristics, but the three differentiation characteristics can better reveal the evolution direction of the current price competition.

3. The formation mechanism of price competition and industry development dilemma

3.1. The internal formation mechanism of price competition

Price competition in the NEV industry is driven by multiple internal mechanisms. From the perspective of game theory, a price war is a classic prisoner's dilemma: the optimal strategy for any individual automaker is to follow with price cuts, making price reduction the dominant strategy and trapping the industry in a "collectively irrational" low-profit equilibrium [3]. However, the prisoner's dilemma of the new energy automobile industry is different from that of the general industry. On the one hand, the influx of capital in the early stage leads to the rapid expansion of production capacity. In 2025, the inventory of new energy vehicles reaches 850,000 units, an increase of 190,000 units compared with the end of 2024. The imbalance between supply and demand continues to increase the downward pressure on prices [5]. On the other hand, the double-point policy requires automobile enterprises to complete certain new energy vehicle output or point index, and they have to maintain production even under the pressure of loss, which further aggravates the oversupply. The superposition of the two factors makes it difficult for automobile enterprises to alleviate the contradiction between supply and demand through production reduction, and to exit the price reduction competition through spontaneous coordination [8, 9].

The homogenization of technology and the lack of product differentiation are the industrial basis of price war. Huang Yana and Deng Zhou pointed out that technology homology leads to product homogeneity and forces the normalization of price competition [6]. A large number of enterprises focus on the homogeneous technology route competition, product differentiation is insufficient, price has become the most important means of competition. Local government policy intervention leads to overcapacity and market segmentation. To protect GDP and employment, some local governments continue to "transfuse" inefficient production capacity into firms, hindering market-based selection. Local governments compete to introduce policies such as tax reduction and

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exemption and land preferential treatment, forming "policy depression competition" and artificially distorting the market competition pattern [3, 6].

The "policy-technology-market" triple lock-in mechanism constructed by Bai and Sha has profoundly revealed the institutional root of price competition [10] : in terms of policy lock-in, enterprises' dependence on subsidy policy forms path dependence, which weakens the motivation of independent innovation; In terms of technology lock-in, administrative technical standards limit innovation diversification, resulting in serious product homogeneity; In terms of market locking, the fake demand created by the policy leads to the distortion of market signals, and it is difficult for enterprises to make differentiated positioning according to the real market demand. Triple lock-in mutually strengthens and causes each other, locking the industry in the track of low-level price competition.

3.2. The industry development dilemma caused by price competition

Continuous price competition has caused multiple industry development difficulties. At the firm level, profit erosion and innovation inhibition form a vicious cycle. The sharp decline in profits directly affects the R&D investment capacity of enterprises. The growth rate of the overall R&D investment of the industry slows down significantly, and some automobile enterprises are forced to cut the R&D budget of key technologies such as intelligent network connection [3]. This "profit for share" strategy is overdrawing the long-term competitiveness of the industry. Due to the decline in profits caused by price reduction, R&D investment declines and product homogeneity intensifies. Huang and Deng pointed out that product homogeneity caused by technological homology forced the normalization of price competition, which in turn further compressed the profit margin of differentiated technological innovation of enterprises [6]. At the level of the industrial chain, the collaborative ecology has suffered systematic damage. Automakers are passing price pressures upstream to their suppliers. In response, several major suppliers have announced layoffs or capacity reductions, while the profit margins of auto parts manufacturers continue to come under pressure. In order to complete the assessment, dealers have to pay the price difference of "inverted bicycle" in advance, facing a severe survival crisis. This transmission chain eventually forms a vicious circle of low profit and poor service caused by price war. At the level of industrial ecology, the "introversion" competition has evolved from a simple price war to a multi-dimensional low-quality competition, which continues to impact the order of the automobile market and product safety. The source of competition is the imbalance between supply and demand, which is aggravated by the imperfect system and mechanism. The important reason for the "inward-type" price competition is the intervention of local administrative subjects.

4. The governance path of new energy vehicle price competition dilemma

4.1. Short-term bailouts: standardize market order and curb disorderly price wars

Given the prominent disorder of the current price war, short-term governance should specify implementation pathways in three areas: law enforcement, monitoring, and exit. In the process of law enforcement, the identification standard of sales below cost price should be clearly defined, and factors such as production cost, reasonable profit margin and average market price should be comprehensively considered to provide operational quantitative basis for supervision and law enforcement. Accordingly, the market regulatory authorities have intensified the investigation and punishment of unfair competition behaviors such as malicious price reduction and sales below cost,

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and transformed the requirement of "resolutely resisting disorderly 'price war'" put forward by the joint symposium of the three departments in January 2026 into enforceable and accountable regulatory rules. In the monitoring link, the competent department of the industry can establish the price monitoring and early warning mechanism of key models with the industry association, and timely interview and window guidance for the models with abnormal price fluctuations in the short term, so as to prevent the price war from being out of control. In the exit process, China should accelerate the establishment of law-based, market-oriented exit channels for inefficient capacity, use mergers and acquisitions, bankruptcy, and liquidation to clear backward capacity, and ease downward price pressure caused by supply–demand imbalance [6]. The core goal of short-term governance is to quickly curb the spread of disorderly price war, restore the order of market pricing, and create a time window for medium-term institutional adjustment and long-term value transformation.

4.2. Medium-term governance: optimize the institutional environment and break the path lock

In view of policy lock-in, the functional orientation of industrial policy should be changed from selective support to functional guidance, administrative intervention on specific technical routes and individual enterprises should be reduced, policy resources should be transferred to public fields such as basic research, standard system and charging infrastructure, and the political performance evaluation system should be reformed to downplay the weight of GDP growth rate in the evaluation of local officials. The inclusion of high-quality development indicators such as the improvement of industrial competitiveness and innovation ability in the assessment fundamentally weakens the institutional motivation of local governments' inward investment promotion [10]. In view of technology lock-in, the restrictions of administrative technology standards on innovation diversification should be broken, enterprises should be encouraged to explore diversified technology routes, the standard system should be improved to support frontier technology research and development, and a fair competitive market environment should be created, so that enterprises can get rid of homogeneous competition through technological differentiation [10]. In view of market lock-in, local protectionism should be broken, discriminatory policies and hidden barriers should be cleared up, disguised protection measures conditional on "local matching rate" and "local registration" should be cancelled, and a unified national new energy vehicle market should be built, so that real market demand signals can guide enterprises to carry out differentiated positioning. This would help correct the market-signal distortion caused by policy-created artificial demand [3, 6].

4.3. Long-term strategy: promote the transformation from "price competition" to "value competition"

First, we will strengthen breakthroughs in core technologies. Enterprises should shift the focus of competition from price to technology, continue to invest in research and development in key areas such as power batteries, intelligent network connection and new chassis architecture, and build differentiated competitive advantages through technology generational difference. The research based on the value co-creation theory further shows that the development of green supply chain of Chinese new energy automobile enterprises depends on different combination configurations of internal and external factors, and enterprises need to realize value co-creation through collaborative allocation of multiple factors, rather than relying on a single price means to participate in competition [11]. Second, an industrial-chain value co-creation ecosystem should be built. Promote the establishment of risk sharing and benefit sharing strategic partnership between OEMs, suppliers

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and dealers, and avoid the simple and crude transmission of price pressure to the upstream. Third, global strategic expansion should be advanced. Capable automakers should be encouraged to "go global" and explore international markets by building overseas plants, exporting technology and brand mergers and acquisitions, so as to share R&D costs in the global market and disperse the risk of price competition in the single market. Fourth, differentiated competitiveness should be cultivated. Firms should be guided to develop differentiated characteristics in product positioning, user experience, and brand identity, to win consumers through value-added services and brand premiums rather than simply through low prices, and to shift from price-based competition to value enhancement. After introducing consumer loss aversion into the Stackelberg game model of new energy vehicles and fuel vehicles, the study finds that the irrational psychological factors of consumers will significantly affect the equilibrium results of pricing strategies, which means that enterprises need to pay more attention to the psychological dimension of consumers in differentiated competition, rather than only focusing on price [12].

5. Conclusion

This paper focuses on the price competition in the new energy vehicle industry, discusses its current situation, characteristics, generation mechanism and cracking path. The research shows that the current price war has been separated from the pure category of market promotion, and has evolved into a multi-dimensional systemic dilemma covering enterprises, industrial chains and policy systems. The crux lies in the superposition of the game logic under the "Prisoner's dilemma" and the "policy-technology-market" triple lock mechanism, and it is difficult to break the deadlock by relying solely on the spontaneous regulation of the market. To solve this dilemma, it is urgent to standardize the market order in the short term, break through the institutional lock in the medium term, and transform to "value competition" in the long term. Limited by the research conditions, this paper mainly relies on the existing literature and public data for qualitative deduction, but lacks an in-depth analysis of the differentiation response of enterprises at the micro level, and does not conduct a rigorous empirical test on the dynamic correlation between price war, enterprise R&D investment and product quality, so the degree of refinement of the conclusions is lacking. Future research will strive to make up for the above deficiencies, try to introduce panel data or build a multi-period game model to carry out quantitative analysis, and carry out targeted case tracking, in order to more accurately describe the evolution path of price war and the actual results of enterprise transformation.

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