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# Research on the Impact of Tax Policies on the Development of the New Energy Vehicle Industry: A Literature Review

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**Abstract**: Taxation policy is one of the primary tools for macroeconomic regulation by government departments. As the mainstream direction for the transformation of the traditional automotive industry, new energy vehicles play a pivotal role. Clarifying the relationship between taxation policy and the development of the new energy vehicle industry is crucial for the subsequent refinement of taxation policies. This study employs a comprehensive literature review approach, synthesizing research from both domestic and international perspectives. The main sections include studies on the development of the new energy vehicle industry, taxation policies for the new energy vehicle sector, and research on the impact of taxation policies on the industry's growth. The findings reveal that when discussing support policies for the new energy vehicle industry, most scholars tend to focus on analyzing current fiscal policies, with relatively limited in-depth and specialized research on taxation policies. This study provides new research directions for future fiscal and taxation policy studies.

**Keywords**: new energy vehicles; industrial development; tax policies; literature review

Chinese Library Classification: F426.471, F812.42

## I. Origin of the Issue

The "dual carbon" goals have become the backdrop of contemporary societal development, with "energy conservation, emission reduction, and environmental protection" serving as the central theme of modern progress. New energy vehicles inherently possess advantages in energy efficiency and emission reduction, representing the future mainstream trend in the automotive industry. The new energy vehicle sector is one of the seven strategic emerging industries and has now become a crucial component of national strategy. However, China's new energy vehicle industry remains in its early stages of development, facing challenges across various dimensions. Relying solely on market self-regulation or corporate efforts alone cannot resolve these issues, necessitating substantial

government support. Taxation policies, as a primary tool of macroeconomic regulation, play a significant role in driving market recovery and industry growth. Therefore, examining the relationship between government taxation policies and the development of the new energy vehicle industry is of great importance.

By reviewing the literature, the research significance of this paper can be identified. Theoretical significance: Firstly, by organizing relevant literature and conducting a review, it can further improve related tax policies, allowing the effects of tax policies to be better realized; Secondly, as new energy vehicles belong to the green technology innovation industry, studying the impact of tax policies on the new energy vehicle industry can effectively promote the integrity of the green tax system. Practical significance: Firstly, it helps promote the achievement of the "dual carbon" goals. The further development of new energy vehicles can better realize the "dual carbon" goals, contributing to energy conservation, emission reduction, and the sustainable development of green industries. Secondly, it enhances the effectiveness of national fiscal policies. The shift from initial direct subsidies to current taxation for new energy vehicles represents a phase-out of subsidy policies, which, from both government and corporate perspectives, helps strengthen the implementation effectiveness of national fiscal policies.

## II. Research on the Development of the New

By collecting and organizing relevant literature, this section will analyze and study the current development status, existing issues, and countermeasures of the new energy vehicle industry.

Regarding the current state of the new energy vehicle industry's development, domestic scholars have conducted extensive research from various perspectives. Bai Mei noted that the global new energy vehicle industry is accelerating its progress, and the substitution effect of new energy vehicles relative to traditional automobiles is gradually emerging. However, from an international standpoint, this effect remains insufficiently significant [1]. Infrastructure related to new energy vehicles is gradually improving, and with continuous advancements in power battery technology, costs are steadily decreasing. Hong Jichao, Liang Fengwei, and Yang Jingsong, among others, pointed out that the new energy vehicle industry has transitioned from subsidy-driven to market-driven, entering a stable development phase [2]. During this process, government authorities have introduced policies such as the "Three Vertical and Three Horizontal" framework, aiming to incentivize enterprises' independent innovation capabilities and continuously optimize the industrial structure. Wang Xiaoming observed that from a technological development perspective, advancements have been made in battery technology, charging infrastructure, and autonomous driving [3]. From the demand and policy support angle, as consumers' environmental awareness grows, market demand continues to expand, while governments have enacted various policies to stimulate consumption. In terms of manufacturing and supply chains, close collaboration between new energy vehicle manufacturers and battery producers ensures supply chain integrity. Regarding sustainability and environmental impact, sustainable production and recycling methods can mitigate the adverse effects of waste batteries and other environmental concerns.

Compared to domestic research, foreign scholars focused earlier on the current development of the new energy vehicle industry. Lee Euna and Mah Jai S studied environmentally friendly and technology-intensive

industries, analyzing them from perspectives such as policy, technological advancement, and market development [4], ultimately forming a fresh and comprehensive understanding of the new energy vehicle industry. Jiamei Tian, Ping Wang, and Daina Zhu noted that China's new energy vehicle industry has advanced rapidly, making it one of the largest markets for new energy vehicles globally [5]. In encouraging and promoting the development of new energy vehicles, Chinese government agencies have played a decisive role, achieving significant breakthroughs in policy, technology, and industrial chains.

Regarding the existing problems and countermeasures in the new energy vehicle industry, although domestic scholars have different opinions, most of them involve technical aspects and infrastructure configuration. Liu Yang and Yu Xin stated that the current difficulties in the development of the new energy vehicle industry are as follows: overall, the production capacity of new energy vehicle enterprises is generally low [6]; Many enterprises have weak technological foundations and limited mastery of core technologies; Inadequate infrastructure; There are limitations in terms of geographical environment; The usage scenario has limitations. Zhang Yuxin and Tang Xuhuan stated that there are limitations in the range of new energy vehicles, which have become the main factors limiting consumer purchases[7]; The inadequate charging facilities can greatly reduce consumers' desire to purchase; The production cost, purchase cost, and maintenance cost are higher compared to traditional cars. Zhang Jianning stated that there are some problems in the development of new energy vehicles: the manufacturing of batteries requires mineral resources, which have long been dependent on imports [8]; Technologies related to the core level urgently need to be overcome; Inadequate infrastructure configuration; The relevant security technologies urgently need to be optimized.

Foreign scholars have also conducted relevant research on this issue. Tan Xiumei and Li Tianyu studied the current situation of technological innovation in China's new energy vehicle industry from the perspective of patents based on domestic new energy vehicle patent data from 2002 to 2019, clarifying the problems and opportunities faced by the automotive industry and providing new ideas for the development of China's new energy vehicle industry[9]. Gong Kunyao stated that the development of the new energy vehicle industry can be approached from the following aspects: government departments issuing relevant policies [10]; Ensure the technological research and development of each link, and draw on the successful experiences of Japan and the United States; The improvement of relevant infrastructure and the mastery of core technologies should be promoted simultaneously.

## III. Research on Tax Policies for the New Energy Vehicle Industry

When analyzing the tax policies of the new energy vehicle industry, this section will focus on two dimensions: first, elaborating on the necessity of tax policies in promoting the development of the new energy vehicle industry, and second, clarifying the problems and countermeasures faced by the current tax policies of the new energy vehicle industry.

Most domestic scholars have studied the necessity of tax policies for the new energy vehicle industry from an empirical research perspective. Liu Lanjian, Zhang Meng, and Huang Tianhang studied the innovation incentive effect of government subsidies and tax incentives on the patent quality of new energy vehicle enterprises

based on data from listed companies in China's new energy vehicle industry from 2010 to 2018[11]. The results indicate that tax incentives have a significant positive promoting effect on patent quality. Sun Jianfu and He Jia applied the traditional data envelopment analysis method to explore the effect of fiscal and tax policies on research and development efficiency [12]. The results showed that fiscal and tax policies have a positive promoting effect on the research and development efficiency of the new energy vehicle industry, and this promoting effect is influenced by the nature of enterprise ownership, position in the industry chain, and other factors. Zhang Wansu stated that tax policies have a significant promoting effect on the development of the new energy vehicle industry, manifested in the following three aspects: supply side tax policies are based on technological innovation and equipment updates, and have a promoting effect on the improvement of enterprise technology [13]; The supply side tax policy has increased corporate profits and elevated their position in decision-making; For consumers, tax incentives, as a direct incentive behavior, can directly reduce their purchasing costs, greatly stimulate consumption, and promote the increase of production.

Foreign scholars have also conducted extensive research in this area. Pengyue Wu, Jing Ma, Xiaoyu Guo combined Cobb Douglas with Data Envelopment Analysis and Analytic Hierarchy Process to study the input efficiency of fiscal and tax policies [14]. The results showed that the conversion rate of subsidy policies by enterprises was low, while the conversion rate of tax policies was high. Government departments should reduce subsidy intensity and establish a system of tax incentives for all citizens. Jonas Mecking and Jonas Nahm stated that some countries have clear tax rates based on vehicle emissions [15], meaning that vehicles with higher pollution and energy consumption have higher tax rates, while vehicles with lower tax rates also have lower tax rates. In addition, a progressive tax rate system can be implemented to expand the market for new energy vehicles.

Domestic scholars have conducted extensive research on the existing problems and countermeasures of tax policies in the new energy vehicle industry, mostly involving preferential policies and broad fields. Li Dejin stated that the existing problems are as follows: the authority and stability of the tax related policy system are relatively low [16]; The targeted construction of the relevant policy system is poor; The scope of policy incentives is relatively small and lacks a feedback system. Liu Fengrui stated that there are the following issues in the research and development production process: the scope of policy incentives is relatively small, and there is an urgent need to introduce policies that encourage transformation[17]; In the sales and purchase process, the tax burden is high and there is an urgent need to issue tax policies related to the purchase and sale of second-hand cars; In the process of maintaining usage: inappropriate setting of vehicle and vessel tax rates, low tax burden, and lack of tax policies related to supporting equipment. Fang Donglin compared and analyzed the tax policies of China's new energy vehicle industry with some developed countries, and pointed out that there are currently problems such as lack of targeting, narrow scope of preferential treatment, low degree of preferential treatment, lack of policy accuracy, and relatively backward policies related to infrastructure and corresponding industry development[18].

Foreign research: Shaolong Zeng, Man Ji, Xinye Huang studied the impact of tax incentives on the development of new energy vehicles, and proposed policy recommendations for the development of new energy vehicles from the perspective of tax incentives: implementing differentiated tax incentives [19], such as offering

lower income tax to enterprises with higher research and development costs, to encourage them to actively carry out research and development activities; Expand the scope of policy incentives, such as enterprises that manufacture components and supply relevant resources; Improve the accuracy of tax policy incentives, such as issuing policies related to value-added tax for the sales process[20]. It is suggested that different carbon tax policies should be implemented at different stages of development, while policies to stimulate low-carbon consumption and subsidize low-carbon behavior should also be introduced.

## IV. Research on the Impact of Tax Policies on the Development of New Energy Vehicle Industry

There are many perspectives among scholars on the impact of tax policies on the development of the new energy vehicle industry, which will be studied from two aspects: performance and innovation.

Regarding the impact on performance, domestic scholars Han Xingguo and Xu Xin used panel data from A-share listed companies in the new energy bus and power battery industry from 2015 to 2017 to study the relationship between corporate R&D investment and financial performance from the perspectives of government subsidies and tax incentives [21]. The results showed that currently in the stage of subsidy reduction, there is a significant negative relationship between tax incentives and corporate financial performance, and there is a lag effect. Zhu Xi and Zeng Fancong took two listed companies in Wuhan, whose main business includes new energy vehicles, as research objects to explore the impact of tax policies on the performance of new energy vehicle companies in Wuhan [22]. The results showed that the two tax policies of turnover tax burden and income tax burden have a promoting effect on the improvement of the performance of new energy vehicle companies in Wuhan. Based on the relevant data from 2011-2021, Pan Zaidong conducted an empirical study on the listed companies of new energy vehicles [23], and found that tax policies have a significant role in promoting the operating performance of new energy vehicle companies, whether from the overall industry or sub industries to various fields.

Foreign scholars Sun Chuanwang, Zhan Yanhong, and Du Gang analyzed the impact of value-added tax policies on new energy listed companies and conducted empirical research using the difference in differences method [24]. The results showed that tax policies did not have a substantial impact on promoting the economic performance of new energy enterprises. Based on the relevant data of A-share listed new energy vehicle companies from 2010 to 2022, Shaolong Zeng, Man Ji, Xinye Huang studied the impact of tax policies on the development of new energy vehicles [19]. The results showed that tax policies have a significant positive impact on the performance of new energy vehicle companies, and tax policies promote performance improvement by reducing financing constraints.

Most domestic scholars conduct research on innovation from the perspective of empirical research. Zhang Yan and Zhang Yongqing selected the financial data of listed new energy vehicle companies from 2011 to 2019, and used traditional data envelopment analysis to establish a panel regression model to analyze the impact of government subsidies and tax policies on the innovation performance of the new energy vehicle industry [25]. The results showed that when only studying tax policies, the impact of policies on the innovation performance of the

new energy vehicle industry was not significant. Guan Zhihua and Xia Yuxiang used the difference in differences method to study the relevant data of listed companies in China's automobile industry from 2006 to 2021, and analyzed the effectiveness of the exemption of vehicle purchase tax policy on green innovation of new energy vehicle enterprises [26]. The results showed that compared with traditional automobile enterprises, the policy had a more significant promoting effect on green innovation of new energy vehicle enterprises. Shen Kaiyan, Shi Bingchen, and Fu Dajun studied the impact of the combination of environmental regulations and tax policies on the innovation efficiency of new energy vehicle companies based on data from new energy vehicle listed companies from 2012 to 2021. The study showed that when the degree of tax incentives is below the threshold, the impact on innovation efficiency is negative; When the degree of tax incentives is higher than the threshold value, the impact is positive [27].

Foreign research: Li Weibing and Zhang Xing conducted experiments based on the purchase tax exemption policy for new energy vehicles introduced by government departments in 2014. In order to study the impact of demand side tax policies on technological innovation of vehicle enterprises [28], they stated that this policy has a significant positive effect on technological innovation of new energy vehicle enterprises, and this effect is more significant in large enterprises, high-tech enterprises, etc.

五、Literature Review

Through the above literature review, it can be seen that both domestic and foreign scholars have conducted extensive research and analysis on the new energy vehicle industry. However, there is a lack of research on new energy vehicle related enterprises and a lack of research on typical enterprises. When studying the impact of tax policies on the performance of the new energy vehicle industry, there is a lack of detailed research on tax policies for enterprises at different stages of the industry lifecycle. When exploring support policies for the new energy vehicle industry, most scholars tend to analyze current fiscal policies, while there is relatively little in-depth and specialized research on tax policies for this industry, providing new research ideas for future fiscal and tax policies.

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