

Exploring the Impact of Chinese Government Policies on the Development of the New Energy Vehicle Industry

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Abstract

In the fast-changing development of new energy vehicles in China, the government's encouragement and support policies have played a crucial role in guiding the development of new energy vehicles. This paper not only analyzes the impact of diversified encouragement policies on the consumption of new energy vehicles in China by interpreting new energy government financial policies and sorting out the timeline, but also analyzes the impact of various incentive policies on the consumption of new energy vehicles in China through the interpretation of new energy government financial policies and the combing of timelines, as well as the impact of policies on the development of electric vehicles and hybrid electric vehicles for various companies at various important time points. This thesis aims to help new energy companies better grasp the direction of the general environment.

Keywords

New Energy Vehicles; New Energy Business Development; Financial Subsidies; Supportive Policies.

1. Introduction

With the increasingly serious global climate problems, since September 22, 2020 in the 75th United Nations General Assembly, the "dual-carbon" goal put forward, China strives to peak carbon dioxide emissions in 2030, 2060 to achieve the strategic goal of carbon neutrality. In the work of energy saving and emission reduction, carbon emission from transportation has always been a big problem that cannot be ignored, and it is also a big problem that the Chinese government needs to focus on solving.

New energy vehicles are vehicles powered by new energy sources, different from traditional gasoline-diesel vehicles, including electric vehicles, plug-in hybrid vehicles and so on. In recent years, the promotion of new energy vehicles is undoubtedly a major solution to this global problem, because the technology and industry vitality of the traditional oil car has been slightly declining, and with China's economic and social development into a low-carbon transition period, the development of new energy vehicles, drive the society to innovative development which enhance the competitiveness of China's automobile global development of new energy vehicles. The formation of the industrial chain has become a national strategy of inevitable choice.

The Chinese government attaches particular importance to the development of new energy vehicles. In June 2010, four ministries and commissions, including the Ministry of Finance, jointly issued the Notice on the Pilot Subsidy for Private Purchase of New Energy Vehicles, which for the first time made it clear that the central government would provide a one-time subsidy for the purchase of privately purchased new energy vehicles in the pilot cities and for the leasing of whole vehicles and batteries, thus making it a start for the government to subsidize the enterprises of new energy vehicles. In 2014, the Announcement on the Exemption of Vehicle Purchase Tax for New Energy Vehicles stimulated the consumer market. In 2012, the

Ministry of Science and Technology (MOST) adopted the "Twelfth Five-Year Plan for the Development of Electric Vehicle Science and Technology", which focused on solving the problems of unclear direction of industrial development, lack of market standardization and the lack of core technology which emphasized China's technology strategy of focusing on electric vehicles. During this period, the state also issued seven supporting regulations for demonstration and promotion, and on the basis of launching 40 application cities, put forward detailed regulations and requirements for pilot cities and demonstration product manufacturing enterprises. Each of these policies is a driving force for the development of new energy vehicles, and deeply affects the direction of the new energy vehicle industry.

2. Literature Review

2.1. On the Necessity of the Development of New Energy Automobile Industry

Regarding the importance of the new energy automobile industry, international experts and scholars agree that the development of new energy automobiles can guarantee national energy security, adjust the energy structure, reduce the dependence on fossil energy and carbon peak, and achieve the goal of carbon neutrality. Tang Baojun, Liu Jiangpeng (2015) quantitatively analyzed the energy saving and emission reduction effect of new energy vehicles by analyzing the life cycle of vehicle fuels, and found that the energy consumption and CO₂ emissions of traditional vehicles are much larger than those of new energy vehicles. Yuan Bo (2018) talked about many advantages mainly from the consumer's point of view, providing a new perspective on the advantages of new energy vehicles.

Environmental protection, low cost of use, good driving experience, simple structure, and easy maintenance in the later stage, but battery life and safety issues are also concerns. Argenta, War (2017) Decision on the Development Policy of New Energy Vehicle Industry points out that the new energy vehicle industry needs the help and support of policies to develop more stably and better.

2.2. Study on Tax and Fiscal Policies to Promote the Development of the New Energy Vehicle Industry

Li Ruixian, Chen Mingyi (2018) combed and analyzed the policy on the current situation of the new energy vehicle industry, and put forward fiscal and taxation policy suggestions for each link. They believe that the current role of taxation is not yet obvious, and the overall tax burden of the industry is still heavy, so the tax burden should be reduced from all aspects and the charging infrastructure should be accelerated, so that new energy vehicles can be developed in the best way. Zhou Yan, Pan Yao (2019) analyzed the differences between government subsidies and tax incentives through the unique perspective of transaction cost theory. They argued that financial subsidies increase transaction costs in two ways, while tax incentives do not. Subsequently, they take listed new energy vehicle enterprises as an empirical sample to prove this conclusion and put forward the idea that the industry should switch from fiscal subsidies to tax incentives." . Li Shening, Zhang Zhe, Li Xining (2019) explored the influence mechanism of government financial subsidies and tax incentives on the new energy automobile industry by establishing a consumer decision-making model and an enterprise decision-making model. Systematic analysis and research for jointly guiding the healthy development of new energy automobile industry, put forward enterprise tax-based, restrictive administrative policies for subsidies, sustainable financial and tax support policies. Zhang Xianchang and Cao Xin (2020) summarize the achievements during the "13th Five-Year Plan". Five-year plan and analyze the existing problems. They said, although China's new energy automobile industry has made certain achievements, but due to the global epidemic and protectionism, the "14th Five-Year Plan" during the new energy industry policy will further change, I think it is necessary to

adapt to the current and future situation. Sun Jianfu, He Jia (2021) used a dynamic panel data model, introduced characteristic variables, and elaborated the impact of fiscal and tax policies on the R&D efficiency of new energy automobile enterprises through empirical research. It is found that fiscal and tax policies have a positive impact on the R&D efficiency of enterprises, which is also related to the nature of enterprise ownership and geographical location.

2.3. Analysis of new Energy Vehicle Finance and Taxation Policies Issued by the Central Government

Ling Yun and others will undoubtedly become an important part of the energy reform, and the related fiscal reform will also affect the new energy automobile industry. The Policy Linkage Impact Study 2017 points out that national policies such as financial and monetary policies play a major role. Promoting new energy vehicles, but the role of the market is not yet clear. "For the long-term development of new energy vehicles, national fiscal and tax policies should be gradually canceled and let the market regulate." Mr. Sun Jianfu, He Jia pointed out that China's fiscal and tax policies for new energy vehicles have two main aspects: promotion effect and selection effect. "At this stage, in order to promote the development of new energy vehicles more effectively, more funds need to be invested in subsidies for the research and development stage to improve the core competitiveness of enterprises." Since 2017, subsidies related to new energy vehicles have been gradually reduced, but this has not only affected the development of the industry, but also the lack of independent research and development, which has led to the elimination of many new energy vehicle enterprises and a decline in business performance, said Gao Yue. It is retarded (put forward different views Questioning). New energy vehicles entering the market with better performance and higher safety coefficient will win the favor of consumers and further promote the consumption of new energy vehicles. In 2020, the national economic development is expected to slow down relatively.

According to Liu Sheping's research, relevant financial and tax subsidies, such as exemption of automobile purchase tax for purchasing new energy vehicles and extension of subsidies for consumers to purchase new energy vehicles, have been worked on by the industry so far. They receive state subsidies to weather the recession. "China's new energy vehicles have a short history of development, the core technology is difficult to research and develop, the required R&D investment is large, and the payback cycle is long. I think we need to provide subsidies that support the accelerated development of new energy vehicle companies.

3. Empirical Analysis

3.1. The Development of New Energy Vehicles has Allowed China to Take a Big Step Toward Becoming an Automotive Powerhouse

At the beginning of the 21st century, China has creatively combined the development of new energy vehicles with the enhancement of industrial competitiveness, the guarantee of energy security, the improvement of air quality and the response to climate change during the important period of transformation of the automobile industry. Starting from the "Ten Cities, One Thousand Vehicles" project, the development of new energy vehicles in China has been going on for more than ten years, with remarkable achievements. In terms of market scale, China has become the world's largest electric vehicle market, with cumulative sales of electric passenger cars accounting for 45% of the world's total, and sales of electric buses and trucks accounting for more than 90% of the world's total; the number of public charging piles completed exceeds that of the U.S., Europe, and Japan combined; it possesses the leading mass-produced power battery technology, and it is the region where innovation in the business model of electric mobility is the most active in the world. In the process of global vehicle

electrification, China has taken the first step and achieved the first-mover effect, which has greatly enhanced the confidence of enterprises and the public.

In people's concept, new energy vehicles do not burn oil, referring to pure electric type electric vehicles, which mainly rely on lithium batteries to obtain power, theoretically can realize zero emissions, is a zero-carbon product, but also China's new energy vehicles mainstream development direction.

By the end of June 2023, there were 16.2 million new energy vehicles, accounting for 4.9% of the total number of vehicles, of which 12.594 million were pure electric vehicles, accounting for 77.8% of the total number of new energy vehicles. Those hybrid new energy vehicles will still have carbon emissions, not zero emissions in the strict sense, and it is regarded as an important intermediate product in the transition of automobiles from fuel vehicles to pure electric vehicles.

3.2. Exploration of Environmental Issues of New Energy Vehicles

But at present, the main force of China's power generation is still thermal power generation, mainly coal power. Even if pure electric new energy vehicles realize zero emission during driving, but the charging process is not 100% zero emission, can it be called environmentally friendly?

In the first half of 2023, the country's power generation capacity was 4,168 billion kWh, up 3.8% year-on-year. Among them, thermal power generation energy for 2945.7 billion kWh, an increase of 7.5% year-on-year, accounting for 70.67% of the total power generation; so that if you look at it, the new energy vehicle power source, most of the coal is indeed burned to obtain, which is by China's "coal-rich, oil-poor, gas-poor" resource endowment is determined. At present, China's coal consumption accounts for 80% of carbon emissions, about 10 billion tons of carbon dioxide, burning coal for power and heating, accounting for 5.3 billion tons. If China's energy production and consumption structure does not change fundamentally, the more new energy vehicles, even if it is purely electric new energy vehicles dominate the world, carbon emissions may not fall but rise.

In terms of the sectoral division of carbon emissions, China's carbon emissions accounted for the highest proportion of the power sector, and the domestic power sector of coal power generation is the main body, carbon emissions accounted for about 51%. For pure electric passenger cars, the carbon emissions in the vehicle use phase account for 61.6% of the total life cycle, for gasoline passenger cars the carbon emissions in the use phase account for 83.9% of the total vehicle life cycle, and for ordinary hybrid passenger cars the carbon emissions in the use phase account for 79.1% of the total vehicle life cycle.

Some people say that Shanghai's new energy vehicles is probably the least environmentally friendly, because the ownership of new energy vehicles here is ranked in the country's Top 3, but the power generation leader has been thermal power, accounting for more than 95% of the local power generation. This more or less wronged Shanghai, as the country's highest electricity consumption of the city, the local thermal power generation is far from enough, but also rely on the west to send electricity to the east, mainly southwest hydro-power, accounting for about 45%.

Shanghai's industrial development, its main industry automobile manufacturing, fine steel manufacturing, petrochemical and fine chemical manufacturing industries are big users of electricity. Ideally, new energy vehicle charging using entirely clean energy generated electricity, which requires a long way to go, according to the plan, it will take until 2060 to achieve carbon neutrality.

3.3. Trend Analysis of Government Subsidies in the New Energy Vehicle Industry

Although the high month that after 2017 the relevant policies lead to the closure of the relevant car enterprises, new energy vehicle market reshuffle, but at the same time, because of the change in the national subsidy policy, promoting the birth of a new batch of car enterprises, and the famous car enterprises azure ideal peng also from that time, slowly developed, since the national subsidy policy change, the author believes that it is a good money to drive out the process of bad money, some of the technology is not so mature, and even the purpose of enterprise creation is to cheat the subsidies within a benign market. Technology is not so mature, and even the purpose of enterprise creation is to cheat the subsidies of enterprises, eliminated in a benign market. New energy vehicle subsidies backslope, I believe that the market must go through the road, although the national policy backslope, but in order to ensure economic efficiency, but will introduce some local subsidies, can slow down the pressure of the car companies, instead of the original national subsidies, from the side of the case that there is no policy to subsidize the new energy vehicles compared to the fuel car does not have much of an advantage, or that only in the case of subsidies, new energy vehicles have more advantages than fuel cars, or only in the case of subsidies. In this case, new energy vehicles have stronger competitiveness.

4. Sum up

4.1. The First Core Point of the Author: Future New Energy Vehicle Market Standardized Industry Development more Effective Guidance from the Government

At present, the global automobile industry is accelerating the integration and development with energy, transportation, information and communication, etc., and new energy vehicles will usher in greater development opportunities and broader development space. In terms of low-carbon environmental protection, the new energy automobile industry has strong potential. At the end of March, China Electric Vehicle Association Forum (2023), the National Energy Board said that new energy vehicles through the charging facilities and the grid for energy interaction, renewable energy can be generated by the effective consumption of electricity. At present, in Shandong, Sichuan, Shaanxi and other 14 provinces, green power trading has been gradually promoted, the cumulative completion of the transaction amounted to 5.2 billion kilowatt hours, reducing carbon emissions by about 5 million tons. Intelligent operating system, on-board intelligent equipment, Telematics, Beidou navigation, cloud computing, high-precision maps and other new energy vehicles are being inserted into the intelligent "wings".

Intelligent networking car into the booming development stage, intelligent networking makes the car to user service as the center, prompting the car from the mobility tool to the intelligent mobile travel space, will bring significant changes to the whole industry chain.

4.2. The Second Core Point of the Author: Future Policies are Expected to Lead New Energy Vehicle Companies to Focus More on Technology and Products:

With the gradual improvement of car-making technology, battery upstream and downstream technology, I think new energy vehicles will always be the same starting line with traditional fuel vehicles, to participate in a more fair market competition, subsidy policy will gradually decline, this time the advantages of new energy vehicles or not, it is really through the consumer to test.

With the disappearance of subsidies, market competition is bound to be more intense, at this time the moat of each brand, is its own core technology and products, no national and local

subsidy policy, whether it is the upstream and downstream supply chain, or the whole car of the late publicity, for each car enterprise will be a big challenge. Traditional luxury brands are also making progress, when faced with the double trouble of fuel and old brands.

4.3. The Third Core Point of the Author: New Energy Vehicles Can Replace Fuel Vehicles in the Future, But Not in the Short Term

China Association of Automobile Manufacturers data show that in the first quarter of this year, the production and sales of new energy vehicles were completed 1.65 million and 1.586 million, up 27.7% and 26.2% year-on-year, with a market share of 26.1%. The current new energy vehicles comprehensively squeeze the fuel car market, has shown a substitution effect on fuel cars. First of all, new energy vehicles are driven by electricity, and the source of clean energy such as photovoltaic and wind energy can form a systematic closed loop of carbon dioxide emission reduction, which is in line with the national "dual-carbon" strategy. Secondly, new energy vehicles can more fully utilize the advantageous technology of high efficiency of electric energy conversion and energy storage system, thus realizing lower energy consumption. Once again, new energy vehicles are richer in intelligent configuration and more complete in function, and the user experience is further improved. After more than twenty years of development, China's new energy vehicles battery, electronic control, motor three electric overall industrial scale and some core technologies have been in the international leading level, vehicle safety and reliability has a very high degree of maturity.

From the perspective of energy utilization, fuel is not an irreplaceable fuel in the long run, and this has become the consensus of countries and enterprises around the world. All ways of generating and storing electricity can be used as on-board energy, such as hydropower, wind power, nuclear power and thermoelectricity. From the perspective of technological update, power battery, drive motor and electronic control technology has been greatly improved in the past five years, and many large traditional automobile companies around the world have announced plans to stop selling fuel vehicles. Toyota plans to stop selling fuel vehicles in China, Europe, and North America in 2030; BMW Group plans to stop selling fuel vehicles in the EU in 2030; BYD has announced the official discontinuation of fuel vehicles, becoming the world's first traditional automobile company to discontinue fuel vehicles.

In the oil crisis of the 1970s, the large-displacement cars of European and American carmakers became uneconomical, and Japanese carmakers began to push for small-displacement economy cars to capture the market and succeeded in becoming one of the world's major carmakers. In this round of energy transition, the auto industry has changed dramatically, the advantages of the traditional giants have been reassessed, and China is hoping to realize the curved road from Germany, the United States and Japan as a follower to a leader. After more than 100 years of development, various technologies have emerged and been applied to fuel vehicles, which are characterized by high performance, mature technology, high reliability, and complete supporting facilities. To completely replace fuel vehicles, new energy vehicles still need to solve a series of problems such as national grid load, a large number of battery scrapping, and perfect charging facilities. Therefore, in a short period of time, fuel vehicles cannot be completely replaced.

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