

The Situation of the Chinese Electric Vehicle Market

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Abstract: Chinese EV market are changing in the last few decade and it start to become one of the most important part of the global market. We will analysis the background first to analysis the basic situation and problem that Chinese EV firms are facing at. How the domestic supply chain affects the Chinese domestic market. and who is the largest competitors in the market. then we will analysis the government intervention to analysis the effect from the domestic policy to the EV firms. After that we will both evaluate the protectionism in the local area can it become one of the restrictions for Chinese EV market to expand it market and market share in the region. After that we will analysis the policy affects from the foreign government like some EU countries. In the end we will give some advice on policy side how can Chinese government can do to prove the Chinese EV firms' competitiveness in the international market and future.

Keywords: Infrastructure, electric vehicle, market.

1. Introduction

In the past few decades Chinese central government have invest on the infrastructure a lot which create enough electricity supply. And the environmental problem become more and more important in 21st centuries. Chinese government decide developed its own EV firms by industrial policy like subsidy from central government and local government, the regulation to promote the EV more suitable for rural area. This policy reduced the barrier for new consumer to accept the EV in their normal life. In the last few years. At the same time, we will analysis the market structure and what kinds of the affect by the policy to the firms in the future. the Chinese EV have occupied majority of the market share in domestic region. And they both got large success and become the most famous topic in the international market.

The domestic policy support by the local and central government' s policy and analysis what the effect of the policy. It will lead to the market become more competitive or closer to the monopoly. Then analysis the affect by the policy from other countries like European union and US. Does their policy will affect the EV firms in China or not.

The rest of paper is analysis of EV market the market structure and competitors. The second part is developed situation for the EV firms (market and sell strategy). The third part is about the EV supply chain development and main participators in the market. The next part is the analysis for the competition in the Chinese EV market. The last part is the conclusion.

2. Literature review

By the research from Danielis, they found that the people in Italia start to change their mind about EV in the market. the EV is more suitable to reduce the cost on transport with same endurance in the future [1]. It both show the EV become more and more popular in the world for some area still struggle with EV mainly about suppliers' problems (there don't have enough kinds for EV to satisfy people's demand). Then by the research from Sperling and Wang, they analysis the Chinese EV market situation [2]. The Chinese EV market now facing the ineffective subsidy from the government and local protectionism in different region which will create new barrier for EV firms to enter the local market. although the subsidy is helpful but the stronger intervention by the central government and local government will more effective than the subsidy[3]. By analysis the data from the Yu's report we found that the Chinese EV market still growing, but the market structure starts to change without the leader firms in the market the rest of firm is facing more intense competition in the future [4].

The existing research about the EV market has been relative full compare to the other industries, but these research more start from whole macroeconomy, to conclude the development of the industry. And we will analysis from the upstream and downstream of the industry's industrial chain, industry competition and domestic and foreign perspectives.

3. Industrial analysis

3.1. Market developed situation

The environmental problem and reduce the greenhouse gases emission become one of the largest problems for all the government in the world. And China, US and Japan focus on the EV (electric vehicle) as the substituted as traditional cars. The Chinese and European government had already published several subsidised policies to encourage traditional car firm or new competitors participate into the competition in EV market. one example for government supports the EV in the European market is the Italian government which decide provide some subsidy to cover the cost when consumers buying the EV seems 2019. At the same time purchase an EV can avoid many "environmental taxes" compare with the fossil one. At the same time the regional government in Italy try to encourage people to pay the EV by reduce the extra cost that personal travel might met like the parking fees in the urban area [1]. With the encourage by Chinese government. There had more and more firms start to participate into the EV market. although the central government provide the large amount of subsidy, the regional protectionism still become one of the restrictions for firms to compete with the local firm in the local area. For instance, the BYD which is the largest EV firm in China (beginning form Shenzhen). They face the trouble when they try to sell their EV to the other province in China. In the local market in shanghai the BYD is not allow to get the subsidy from the local government in shanghai. At the same time the local government only allowed 3 models of car that BYD produced can got the local subsidy from the local government until February 2014 [2]. These kinds of action cause the market barrier for more competitive firm to participate into the local market and make their products less competitive than before. However, in the last decade the Chinese government has an action plan called Made in China 2025 which means Chinese government want Chinese EV industry become the leader the in the international market in the future. At the same time the competition in the domestic market become more intensive than before [3].

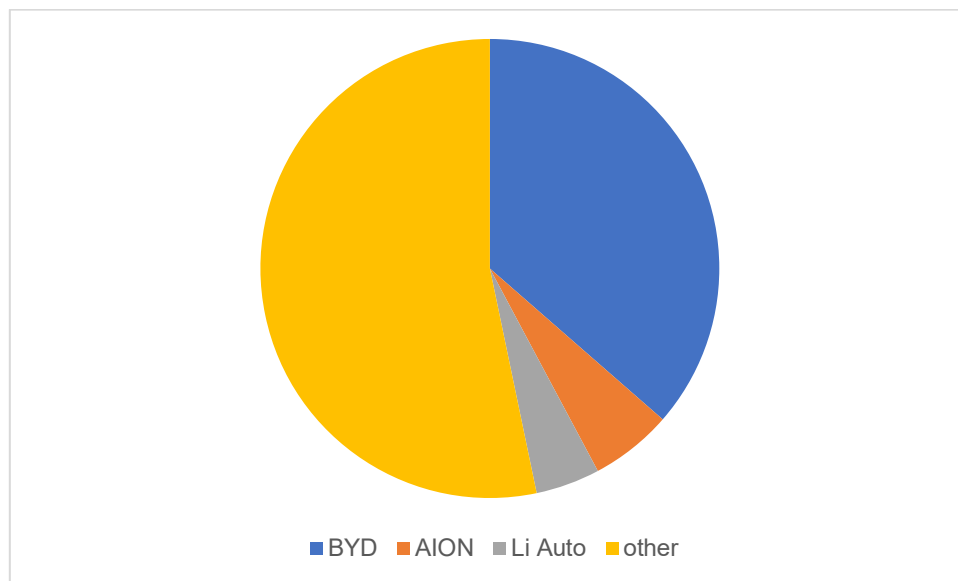


Figure 1: Chinese EV firms market share

As Figure 1 shows that the data from China association of automobile manufacturers in 2023, there have 8.304 million EV been produced during 2023. At the same time over 3.0244 million EV have been selling by BYD which occupy more than 30% of the market share. For the rest of the Chinese EV firms the competition for the rest of the 70%. For some small private EV firms, the market become more difficult to make the profit or survive. And the second is AION from Guangzhou Automobile Group Co., Ltd take the second largest market share in the domestic market. it sells 480 thousand EV during whole year. we can already find the large gap between the two competitions. It seems the leader effect by the BYD in the market. then is the third, Li Auto which only sell 376 thousand EV in 2023. For the rest of Chinese EV firm have to face the market share shrink and more drastic competition [4] (Figure 1).

3.2. Supply chain

Then is the supply chain part, in the last few decades Chinese government had already invest on infrastructure for long time. It reduces the transport and communication cost for firms and make them become more competitive in the domestic market and foreign market. and we will analysis how the supply chain improve can help Chinese EV to expand their market and become more competitive than other EV firm from other countries. Like the most famous EV firm in China the BYD which publish the new type of battery and provide personal charging services at home which means you can generate the electricity at home to cover a part of transport cost bring by the EV in the normal life. If there have more electricity the firm can sell to the local government and got some payment [5]. These kinds of production and services encourage Chinese consumer to buy the EV rather than traditional car. Then the service both reduce the barrier for consumer when buy the EV. And for the whole market the production of the battery has already doubled between 2021 to 2022 which after the covid 19 the Chinese EV battery market scale still expanding during this period [6]. And the battery is one of the most important parts for EV. The EV firms in China and US try to developed their own battery technology. Then is the row material problem for EV firms in the vertical supply chain, the mining industry and row material processing industry will both effect the domestic supply chain in China. in China the coal is most important part in the Chinese electricity generation by the data form the Chinese government, although government have continued limited the coal mining industry for serval year there are still more than 40% of electricity produce by the coal power station [7]. At the same

time to protect the environment the Chinese government limit the mining industry which lead to coal price increase. It led to higher electricity generating cost and bring the higher cost for consumers which want buy an EV as their transport function.

At the same time the Chinese government's subsidies the EV firm around China in the past 8 years. However, the large amount of subsidy attracts more firm try to cheat the subsidy by resell or sell the traditional car. The government control failure still exists. Although the Chinese government publish the new regulation about its industrial policy. The Chinese government continue cut the direct subsidy on the EV from 2017 to 2020 and they plan to cancel the direct subsidy from the central government in 2020 [8]. However, the potential risk (like cheating local government to get local subsidy or corruption) will become one of the restrictions for Chinese EV firms competed with each other in the domestic market.

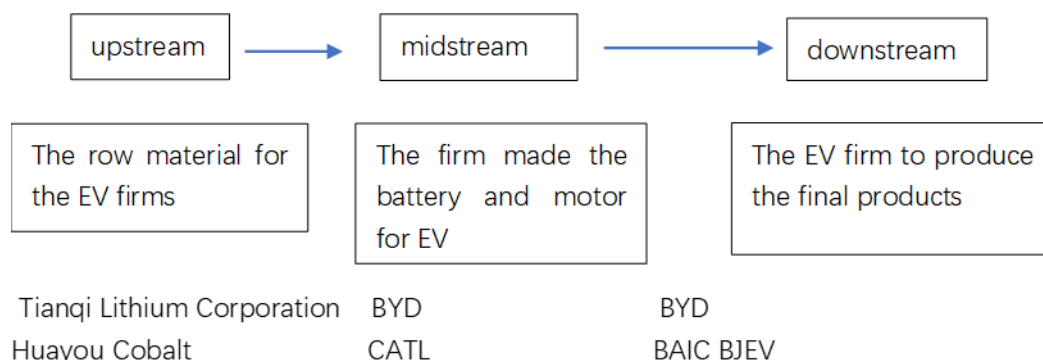


Figure 2: Chinese market supply chain

For the firms and producers at the upstream in the supply chain usually supply the row material to the battery or motor industries. And we select three firms at upstream which is representative supplier in China. the Tianqi Lithium Corporation majority products and services is supplying the lithium as the row material to the battery industry as the row material supplier in the supply chain. Then is the Huayou Cobalt which has created a new energy lithium battery industry ecology from the development and smelting of nickel, cobalt and lithium resources, to the deep processing of lithium battery cathode materials, and then to resource recycling [9] (Figure 2).

Then is the industry in the medium of the supply chain like we have already talk about the BYD which connect its own battery technology and EV firm to make the production process become more efficient. Then is the CATL which is the largest battery supplier in the world. It occupied 37.5% of the battery market share in the world during the January to the May in 2024 [10]. At the same time the CATL not only provide battery to the Chinese EV firms it both provide to the Tesla and General Motors. And its technology has developed lot for EV to running longer distance [11].

In the end is the firm which produce the final goods (EV) and services (selling services) to the consumers. First is the one of the largest EV firms in the world the BYD which occupied 36% of the EV market share in China. than is the BAIC BJEV which is an EV firm focus on the technology on charge station and EV development.

4. The Market Competition Analysis

4.1. Domestic

In the last few decades there are a lot of EV firm join the Chinese EV market to analysis the domestic market and foreign market. to compare what kinds of difference between them and the government support different.

Tesla in China as a competitor

In the Chinese domestic market, in the last few decades many new competitors enter the market for expansion their own market. some of the firm developed from the vertical supply chain like the battery and energy generation (the BYD). Then is the competitor which developed from the horizontal market, usually transfer from the traditional car to the EV at the moment like Tesla (a US firm which set up a super factory at shanghai in 2019), although the Tesla effect by the covid 19, the factory still recovers very quickly and become one of the largest competitors in the Chinese EV market [12]. And by the policy publish by the Chinese government the car made by tesla in China or some model can both got the tax free and subsidy by the local government [13]. The Tesla earned 96.773billion dollars in 2023. And they got 1.242 billion as its final profit in 2023[14].

The Chinese EV firms and competitors

the largest Chinese EV firm is BYD which is the largest competitor in the domestic region. It is set up in 1995 and the main job is producing the battery for mobile phone. Then they join the EV industry. The experience in the battery industry help BYD a lot which make them can connect the vertical supply chain very easily and they can produce battery for themselves to reduce the transfer cost during the EV production process. For Chinese domestic market the competition between firm become more conflict than before. the regional protectionism and increase cost by over competition will become the largest challenge for majority EV firms in China. By the diagram that have already show above we can find that the BYD occupied 36% of market share in the Chinese EV market. and 3.0244 million EV have been selling by BYD during the 2023.

About the over competition led to the higher cost during the competition. The first reason is that the Chinese government have already invest too much on the local infrastructure and public transport. These products and services might become the largest competitor for EV. For EV firms they have to set up new charge station to make sure that the EV keep running in long distance trip. And it is the most common way for EV firms to cover the shortage of EV which is endurance compare with the traditional vehicle.

4.2. The foreign market

The market in the foreign country for Chinese EV firms have already effect by the trade war and the worsen international relationship with European countries. The foreign government regulation more related to the tariff and restriction in their market. For instance, the European government decide add the extra temporary tariff to the Chinese EV in 2024. It will lead to less competitive for Chinese EV to enter the market. and for US government set up new policy during the trade war to protect its local producers to prevent the Chinese EV firms to occupy the market share too quickly. It both lead to extremely high price for Americans to buy a Chinese EV in their domestic market because of the high tariff [15]. However, for US market the too high tariff might lead to the black-market development in US. On the other hand, the high tariff with trade war might affect US local EV firms which need import large amount tool and row material during the production process. If we expected in the future the trade war between US and Chinese government creates more and more conflict, the cost for US EV firm will face higher cost and higher price which will cause the US firm become less competitive than the EV firms from other countries. The tariff added by the European union on the Chinese EV in 2024. The policy is that impose a temporary countervailing duty on pure electric vehicles imported from China from July 5. Among them, SAIC Motor imposed an additional tax rate of 37.6%, Geely 19.9%, and BYD 17.4%; The average additional tax rate for other automakers cooperating with the EU survey is 20.8%, and the additional tax rate for those that do not cooperate with the survey is 37.6% [16].

5. Conclusion

In the end, by analysis the market share of the Chinese EV market we can find that the Chinese EV market still has the future of the competitive market. but some of the firms have already start to lead the market like BYD, AION and Li Auto. These EV firm occupied the most of the market share. And for the other EV firms their competition will become more intense than before after the Chinese central government decide remove the direct subsidy from the central government. For rest of the firms, the subsidy by the local government will encourage the local EV firms at the same time become one of the largest restrictions for the EV firms from the other areas. And the advantage from the Chinese supply chain will continue make Chinese EV firm become more competitive in the China local market.

The Chinese government should focus on the competition in the market by subsidy all the EV firms in the market except the top EV firm which is possibly become one of the monopoly firms in the future. For the foreign firms should been subsidised at the same time to ensure its competitiveness in the Chinese market which can encourage domestic firms to prove their efficiency and production process.

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