



中山大學管理學院  
SUN YAT-SEN BUSINESS SCHOOL  
SYSBS



中山大學嶺南(大學)學院  
LINGNAN (UNIVERSITY) COLLEGE

# The Reform of New Energy Vehicles, Situation and Prediction to 2023

National Analysis of  
New Energy Vehicle Industry in China

By Xiaoyue May, Jieyu Shuan, Yufeng Xing, Zhentang Xie

Lingnan (University) College, Sun Yat-Sen University  
May 2, 2018



# Contents



PART ONE  
Industry Analysis



PART TWO  
Case Study



PART THREE  
Prospects



PART FOUR  
Conclusion

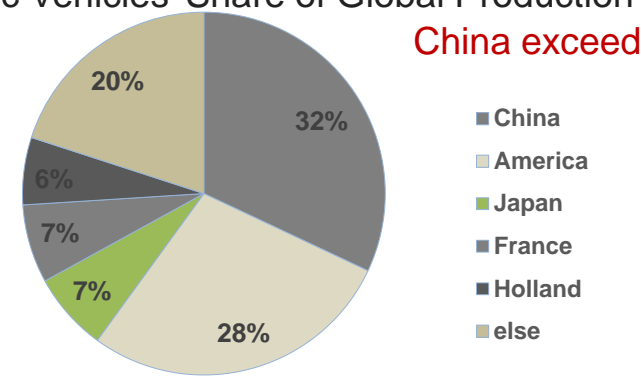


PART FIVE  
Acknowledgements

Downstream vehicle market -  
Market penetration steadily increased ; passenger cars and utility vehicles have gradually become important market drivers

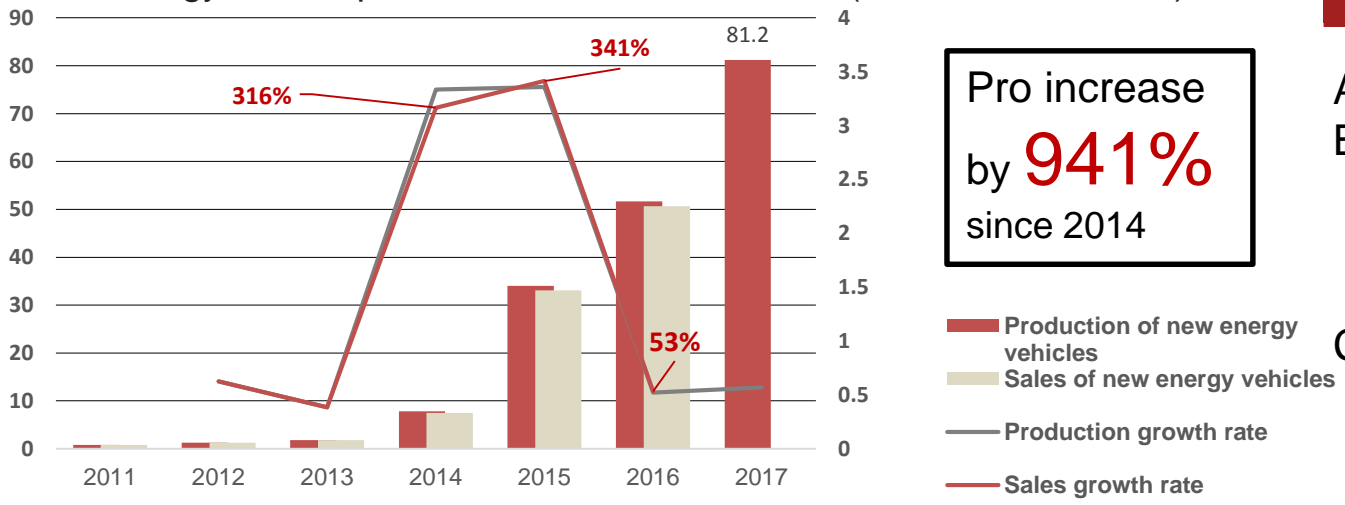
1 China becomes the biggest market in the world

National Electric Vehicles' Share of Global Production in 2016  
China exceeds the United States



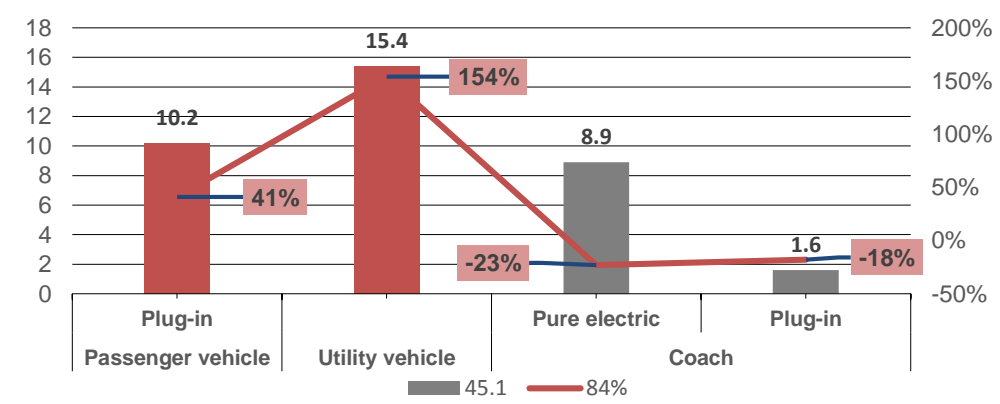
2 New energy vehicle production and sales increase a lot

New energy vehicle production and sales in China(/ten thousand units)



3 Passenger and utility vehicle become more popular

Production of different types of vehicles(ten thousand)



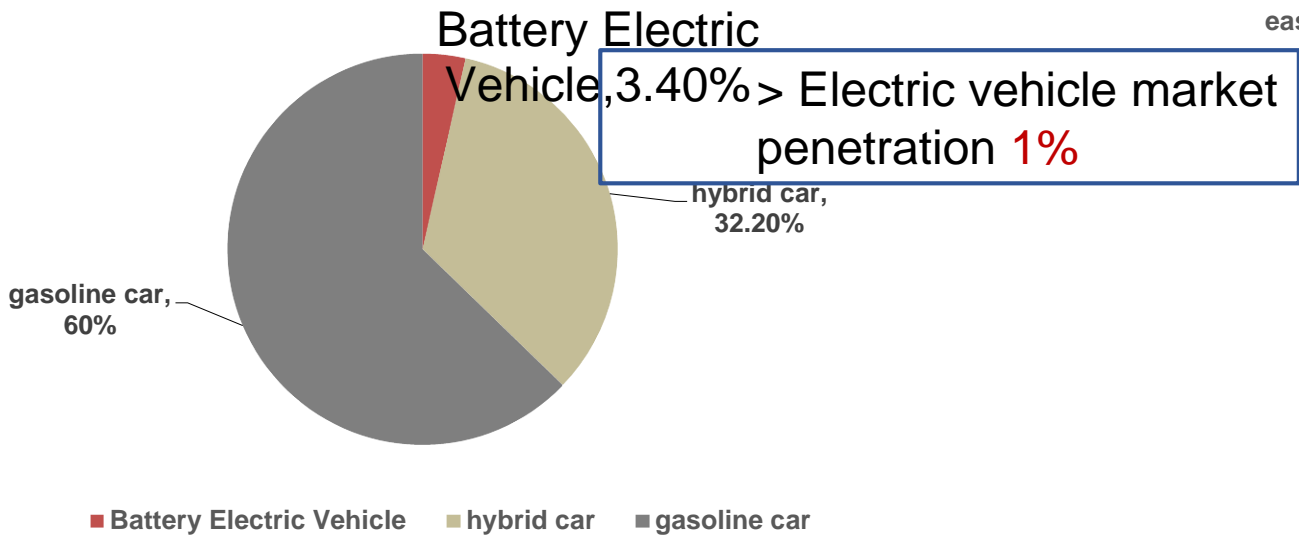
Insights&Expectations

- A. Chinese market is expected to increase in the future.
- B. Both vehicle production and sales increased a lot from 2011 to 2017. Particularly, the sales growth rate increased by 53% in 2016 and the production reaches 81.2 (ten thousand units) in 2017.
- C. In the future, we expect the use of passenger and utility vehicles would become the most important market drivers because of their increasing production these years.

# Consumer Preference - Changing customer preference shows the increasing population of BEV

## 1 The increasing demand for Battery Electric Vehicle

Internet users' willingness to purchase different types of cars in 2016

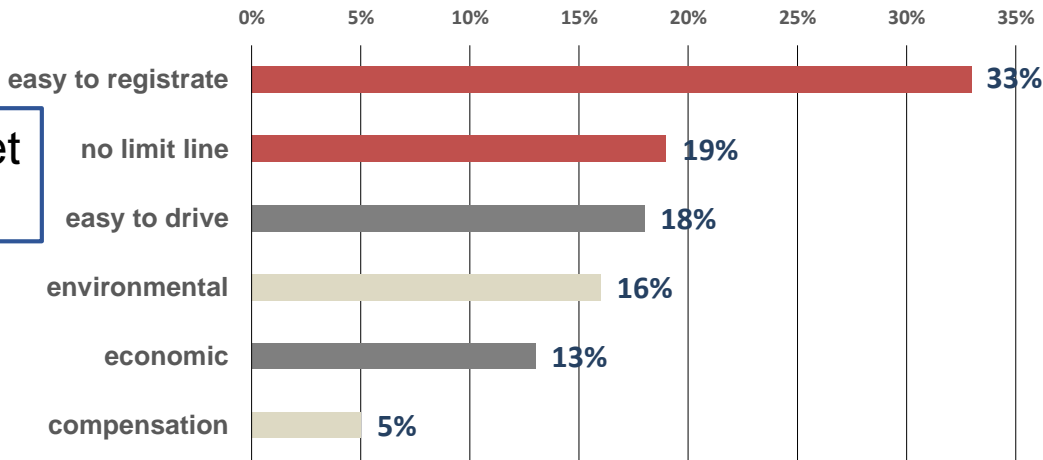


### Insights&Expectations

**A.** The proportion of people who are willing to purchase BEV is increasing, which shows that BEV is becoming more popular among consumers.

## 2 Government policy pushes the demand

Reasons for selecting Battery electric vehicle

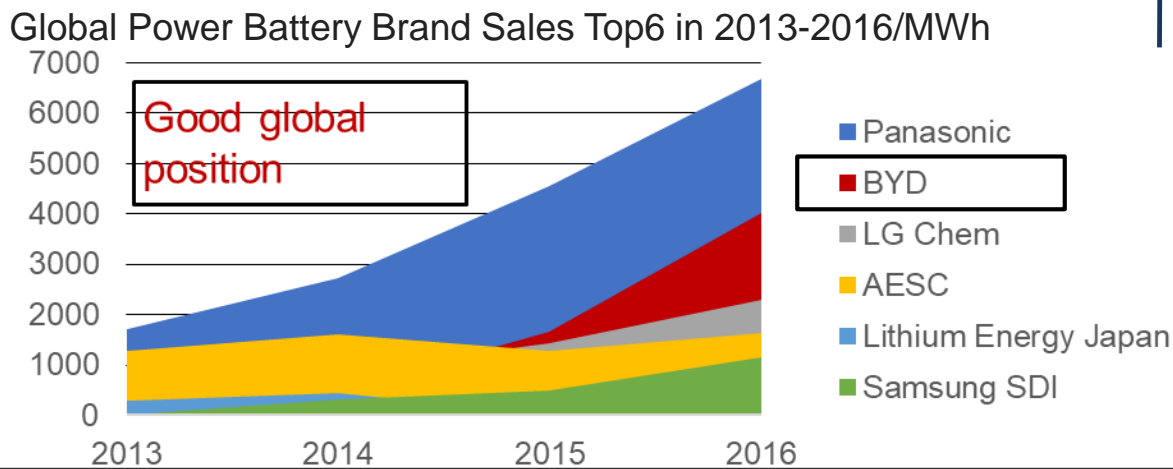
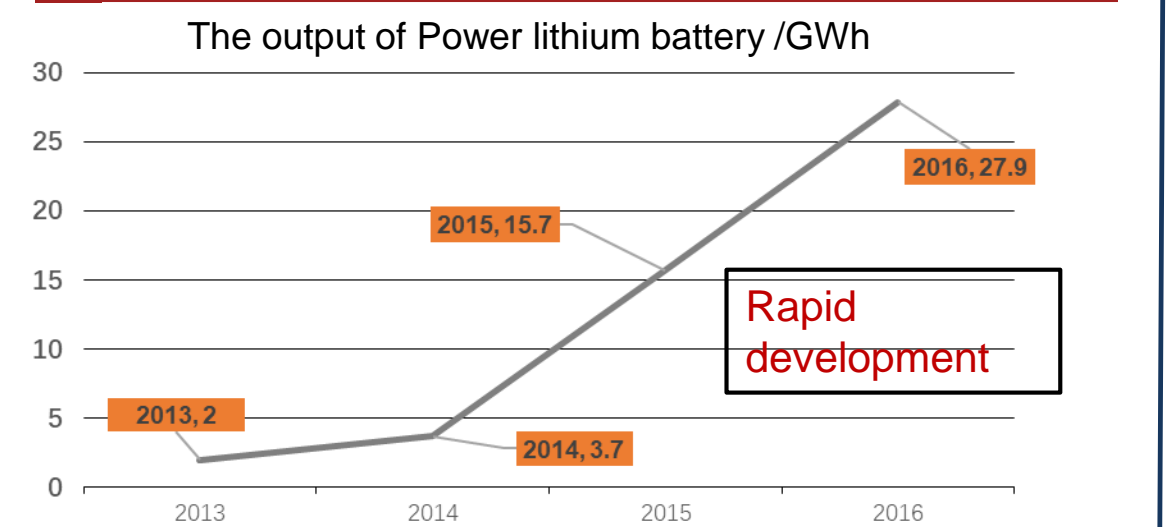


**B.** Two of the most important reasons for consumers' changing preference are because BEV is easy to register and there is no limit line for BEV.

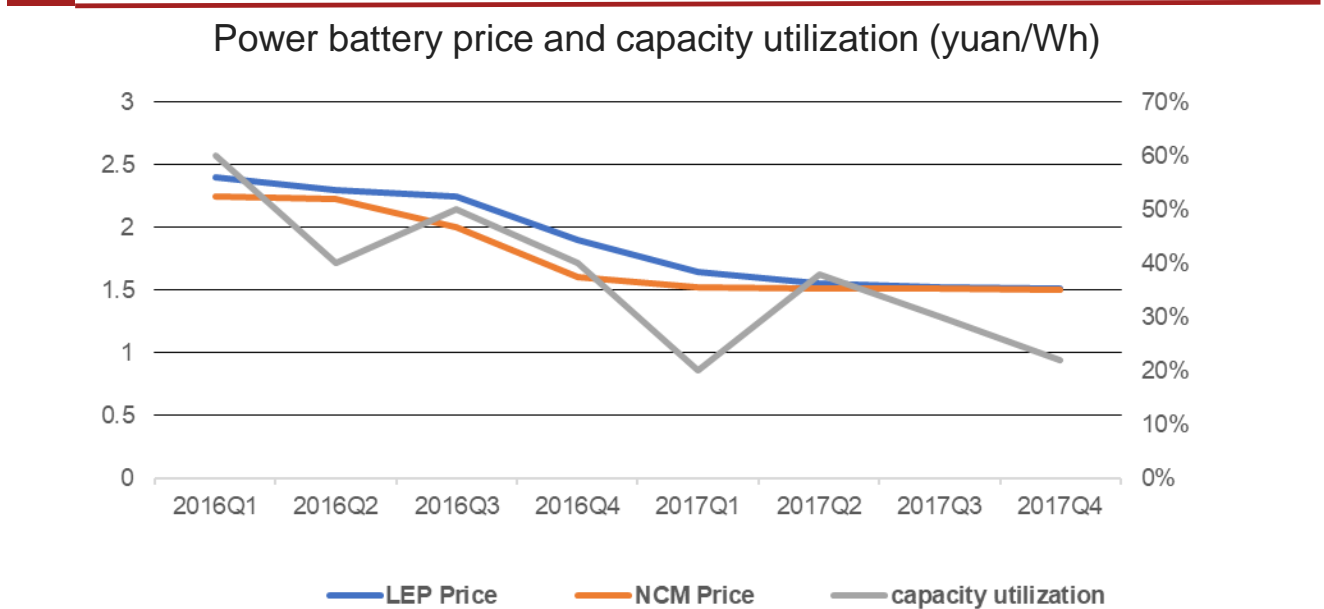
**C.** Since government is now taking active transportation policies to encourage people's use of BEV, more and more people would choose BEV and the industry will continue to grow in the foreseeable future.

Upstream supply market -  
**Good Power battery market; long-term price decline has become a new driving force for the development of the new energy vehicle**

**1 Good power battery market**



**2 low capacity utilization leads to short-term downward price**



From the graphs, we can see that the power battery market is promising in China, and some of the battery brands in China suffer a decreasing price because of insufficient capacity utilization.

# Upstream supply market - Good Power battery market; long-term price decline has become a new driving force for the development of the new energy vehicle

## 1 Technology progress reduces the battery price in the long run

A. **Raw materials-**  
✓Lithium reserves are abundant.  
✓ Lithium extraction process in China's salt lakes (盐湖提锂技术) continues to improve in the future, which means lithium costs would be gradually reduced.

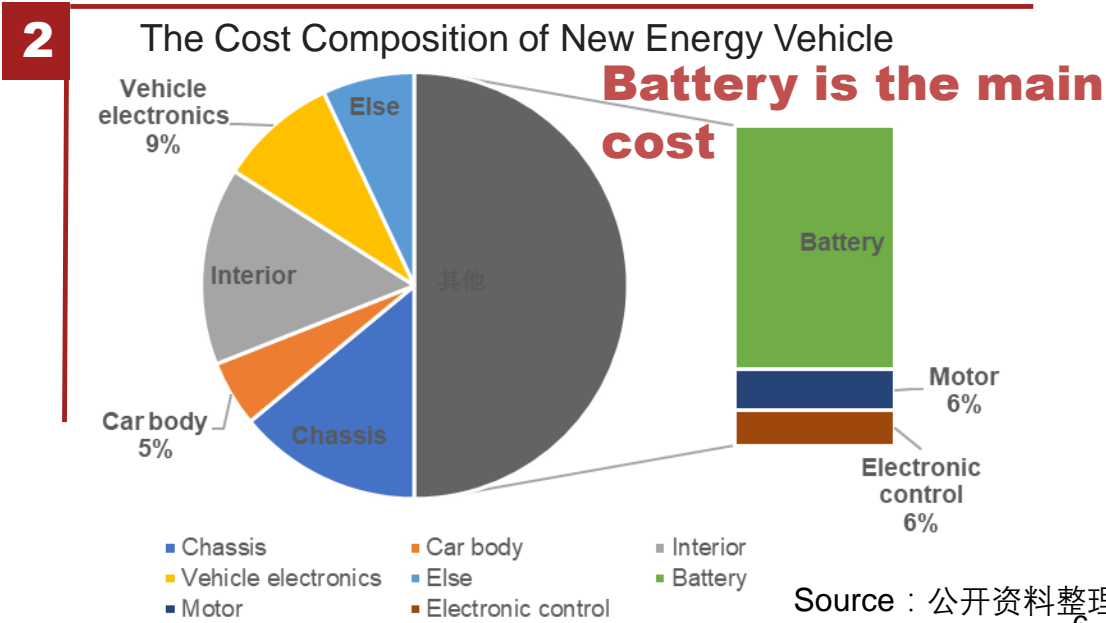
B. 三元技术占主导-Switch from low energy density batteries to high energy density batteries, and therefore efficiency would be improved in the future

	2015	2016	2017	2018E	2019E	2020E
三元技术	4	6	11	19	33	47
磷酸铁锂	11	20	25	29	33	38

Source : 中国产业信息网

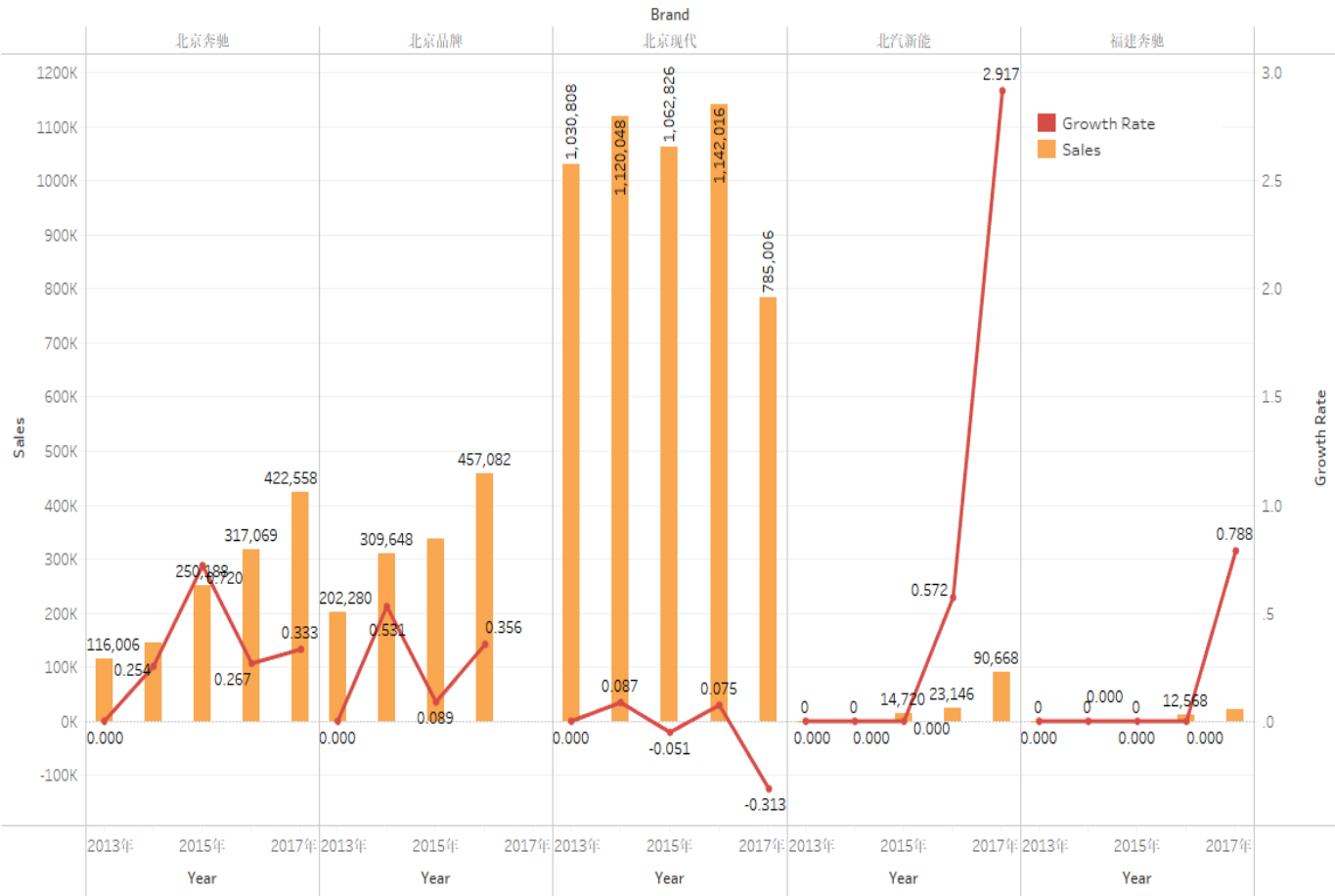
## Insights&Expectations

In the long run, the cost of the battery would decrease because of the technological progress and therefore the decreasing price would become a large advantage during the sales of BEV

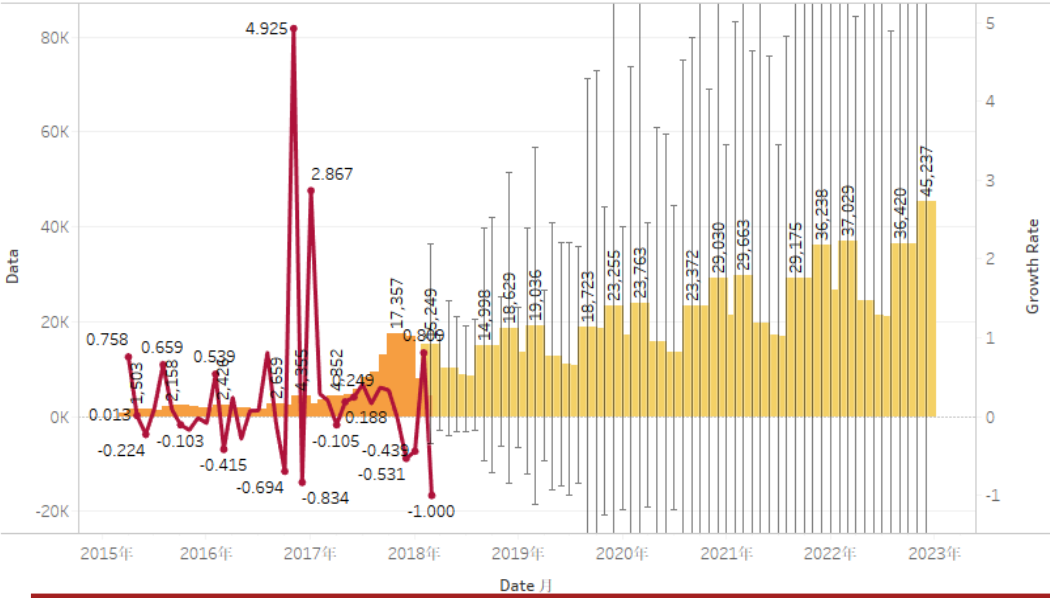


Sales Construction & Prediction -  
In 2023, the electric vehicle Sales is expected to achieve a moderate sales share of other types of vehicles

1 The Sales Construction of BAIC Motor



2 The Sales and Predict sales of BAIC BJEV



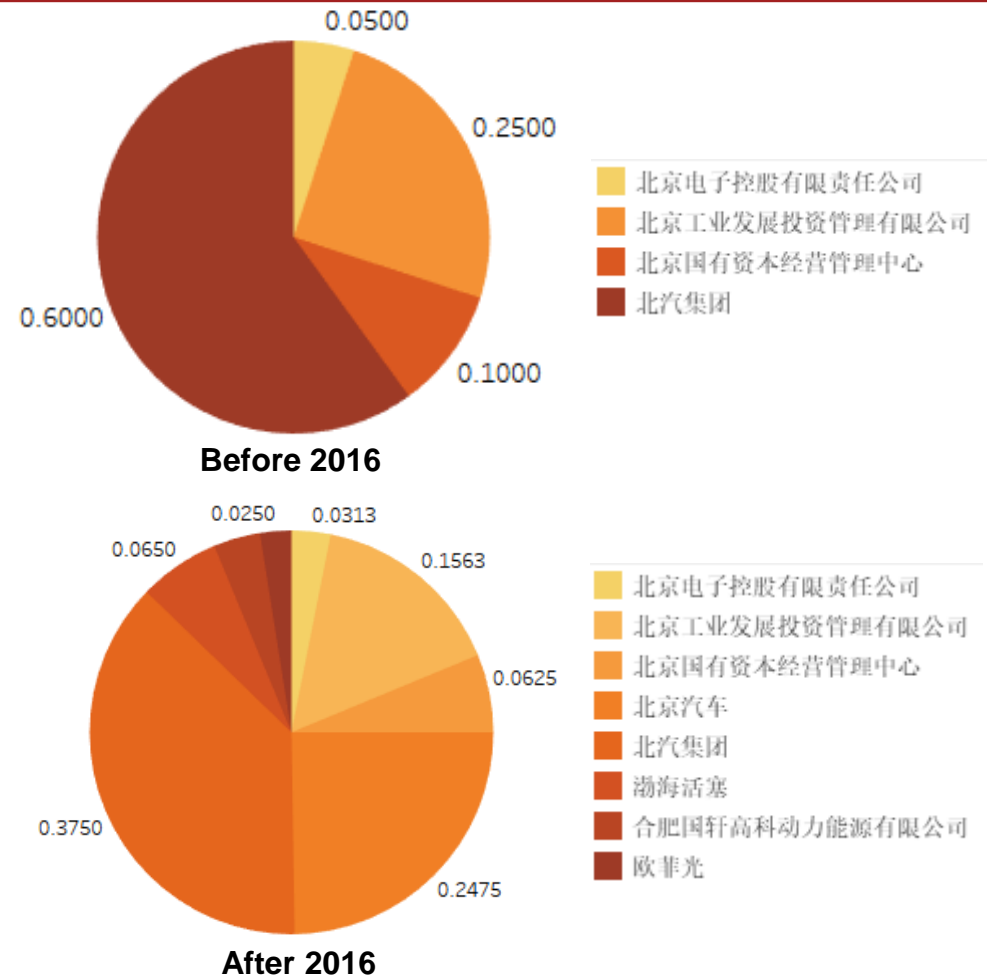
Insights & Expectations

The growth rate of electric vehicle sales is much higher than that of other types of vehicles. In 2023, it is expected to achieve a moderate sales share of other types of vehicles and in December, the monthly sales of electric vehicles will exceed 45,000.

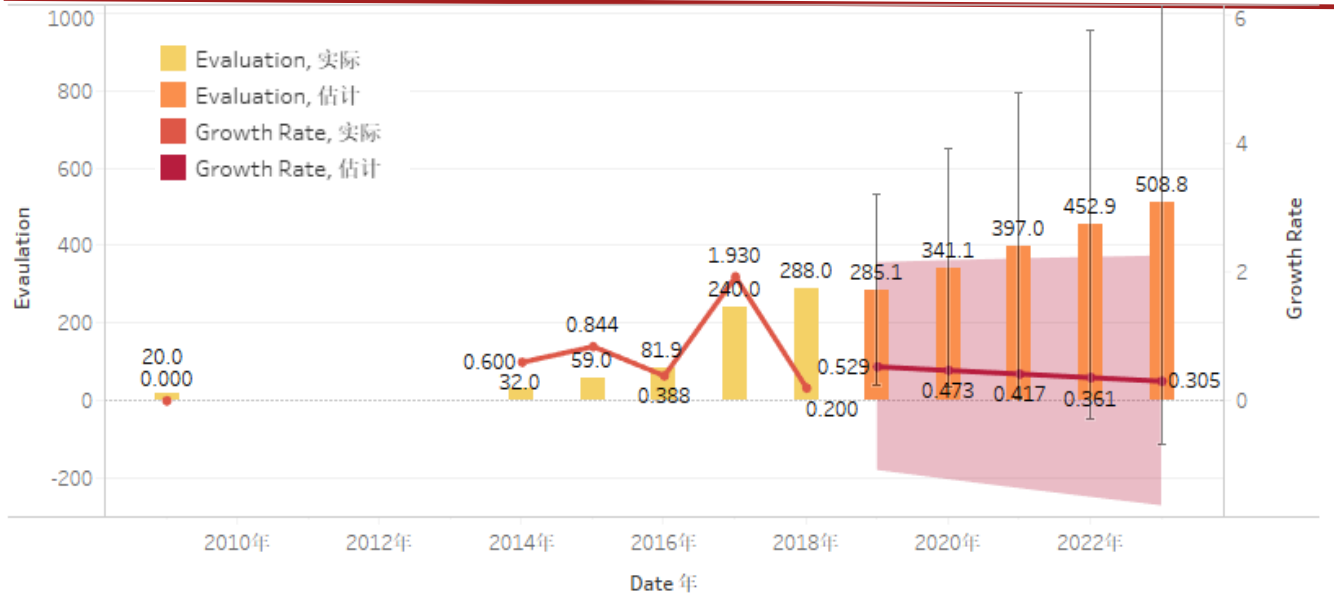


# Capital Construction & Evaluation - Composition of nationalized capital is more complex with an estimated market capitalization-registered capital ratio of 25.44 in 2023

## 1 The Shareholder Composition of BAIC BJEV



## 2 The Evaluation of BAIC BJEV



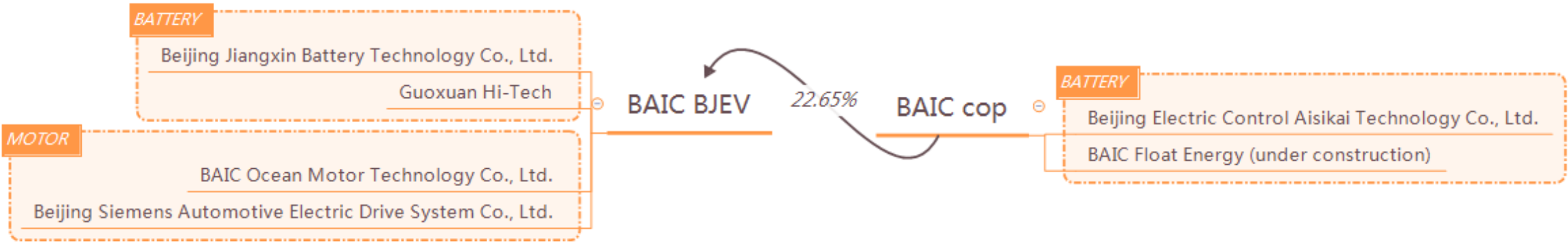
## Insights & Expectations

BAIC BJEV is a leading automaker for domestic new energy electric vehicles and was listed on the backdoor on Apr 28, 2018. The valuation is 28.85 billion and it is expected that with the further integration of state-owned capital, the ownership structure of BJEV will be more complicated. In addition, according to the market's existing valuation data, by 2023 the market value of BJEV is expected to exceed 50 billion yuan, which shows that the capital characteristics of Chinese auto companies are adapted to the Chinese market structure.

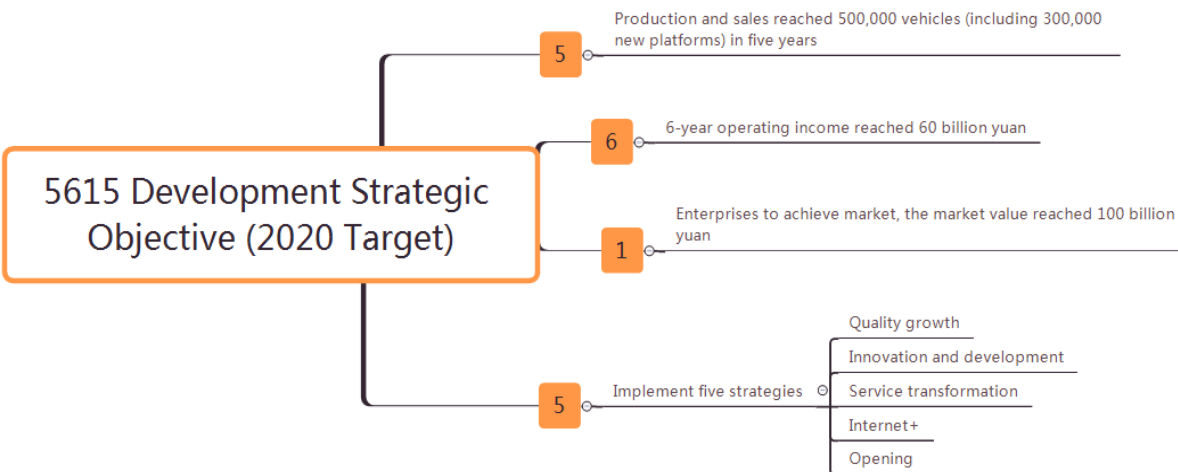


Relationship & Strategy -  
A stable and firm national supply chain, a clear strategy help with the company's long-term development

1 BAIC Thri-electric products joint venture layout



2 5615 Development Strategy

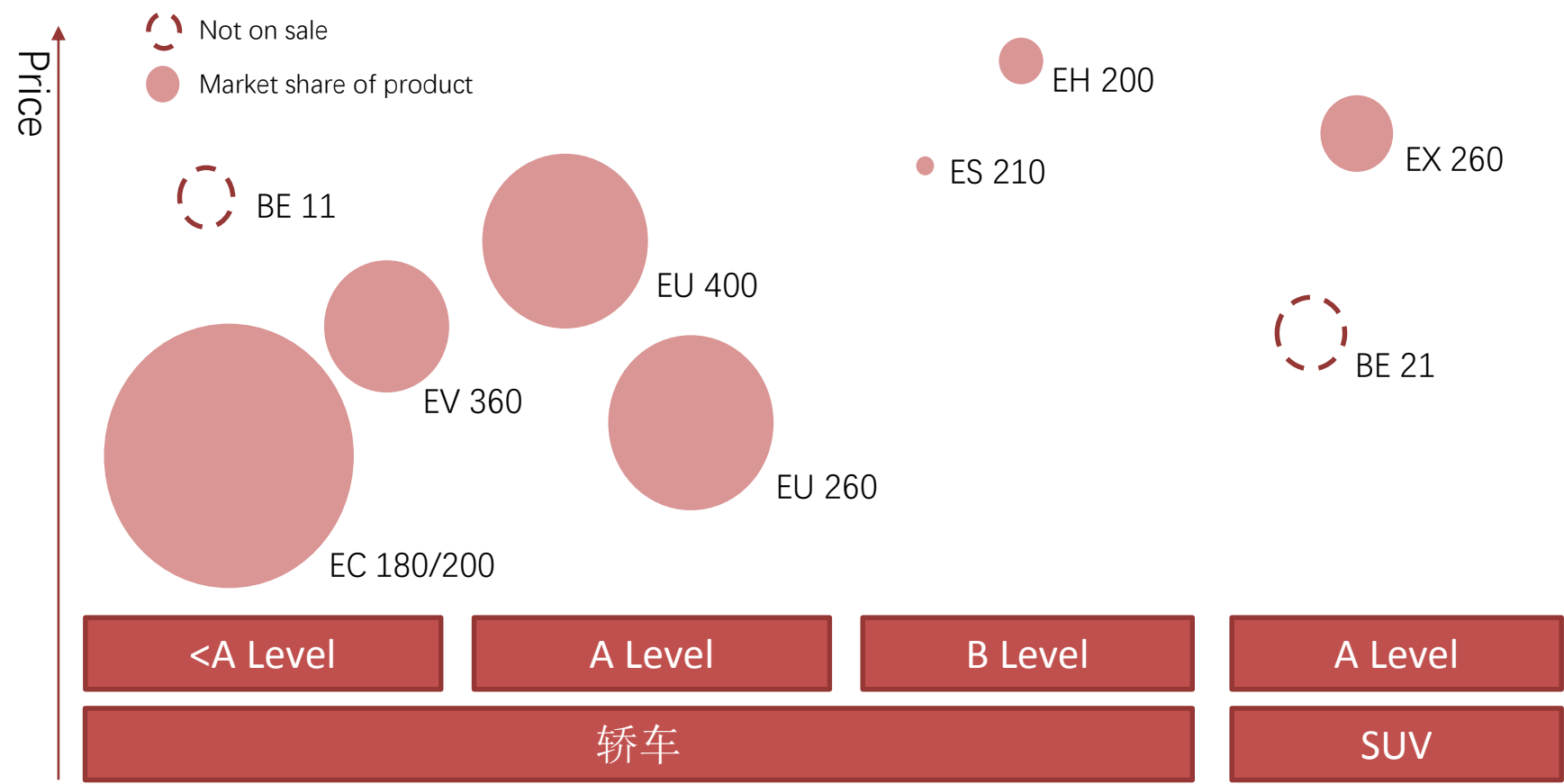


Insights & Expectations

At present, the automotive industry is technically focusing on "intelligent, electrified, networked, and lightweight" to carry out various innovations. However, if these technological innovations are not supported by good strategic plans, it will be difficult to really drive the rapid development of the entire industry. The development of new energy vehicles is particularly so. The performance of an electric vehicle is no better. If there is no good strategy for promotion and application, it will be difficult to gain the favor of consumers at this stage.

Market Share & Target Consumers -  
In 2023, the electric vehicle sales is expected to achieve a moderate sales share of other types of vehicles

1 The Market Share of BAIC BJEV



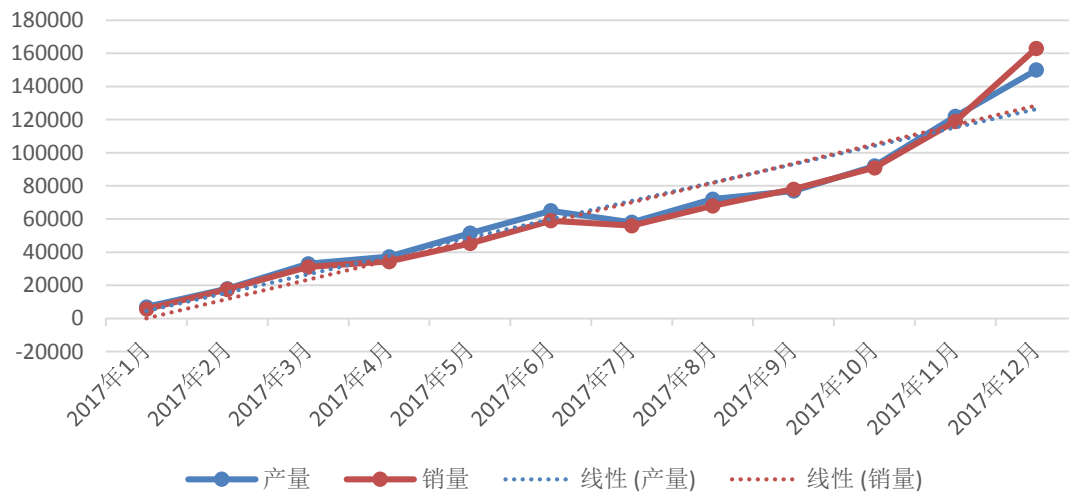
Insights & Expectations

In the context of the 2017 subsidy retreat, BAIC BJEV launched the EC Series, which does not rely on subsidies, and successfully broke through the dependence on government subsidies. BJEV not only achieved good sales performance in first level and other cities. In the limited-purchase city, the sales of BAIC New Energy exceeded 37,000 vehicles, accounting for 36% of the total, achieving rapid growth.

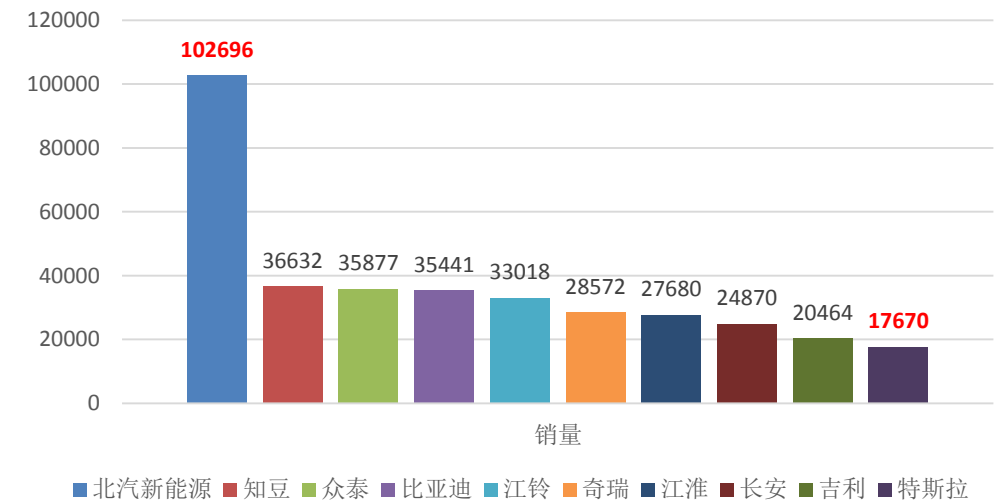
From the graph, we can also see that BAIC's market share is mainly concentrated in the A-class sedan, and the target group is mainly the price-sensitive low-end market.

# Facing a fast-growing market - Tesla, the outstanding foreign competitor, struggles in China

## 1 Production & sales in new energy vehicle market, China, 2017



## 2 Sales of BEV in China, 2017



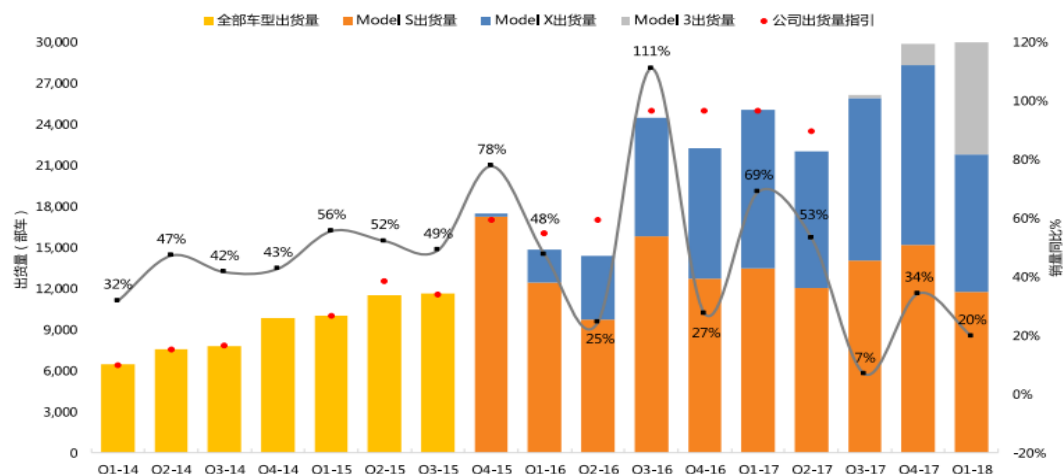
## Insights

- Tesla, which was established in America, 2003, is regarded as one of the top players in the field of new energy vehicle globally.
- Having forecasting a fast-growing market in China, whose recent growing trend is vividly depicted in the graph, Tesla entered the market in 2013 with its bestsellers.
- Despite its early entry, Tesla was not performing well in China over these years. Typically, for sales of BEV in 2017, Tesla's sales was merely one tenth of that in BAIC BJEV.

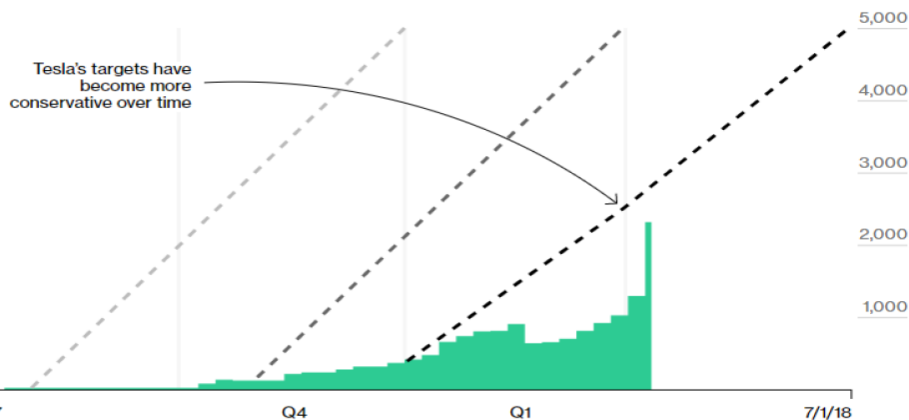


# Being trapped in capacity limitation - Construction of local supply chain becomes primary concern

## 1 Comparison between expected and actual production



## 2 Decreasing estimation on productivity in Model 3



## Insights

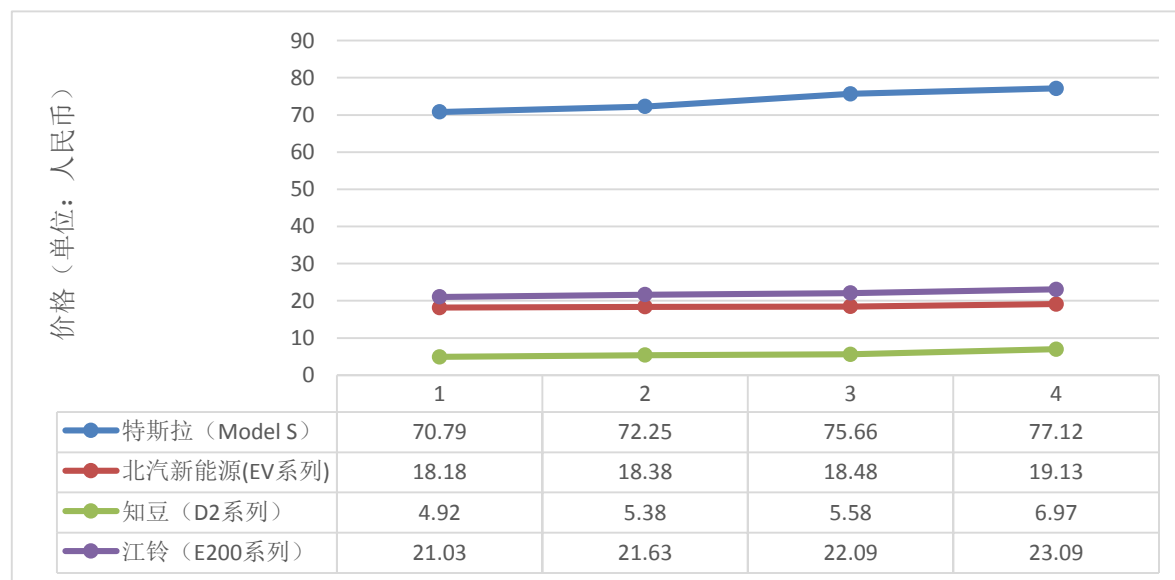
- Facing a demand-booming market, capacity has become a fatal drawback in Tesla. Tesla's failure in fulfilling 53.76% of its production plan in Model 3 series has drawn criticism and doubt to its capacity.
- Such problems can be orientated to the supply chain. Owing to the lack of local supply chain and sufficient local suppliers, extra time, transportation and production cost is exceedingly high in breakdowns of the whole process.

## 3 Tesla's supply chain



# Import policy becomes a key factor - Tariff pushes up price & lead to contracted customer segmentation

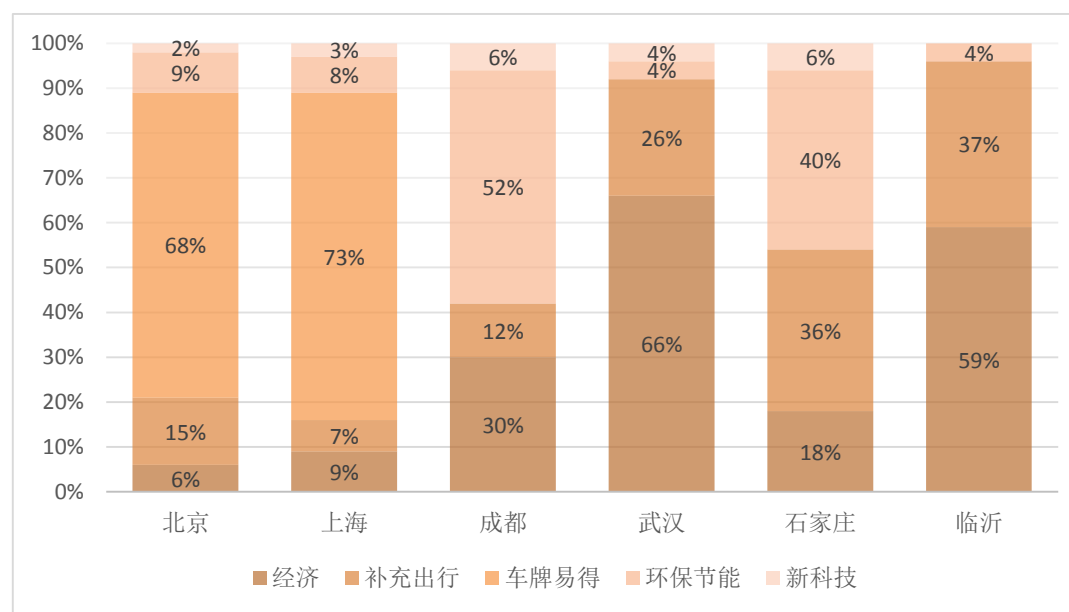
## 1 Price comparison between Tesla and domestic companies



## Insights

- Demanding policies on imported vehicles greatly contribute to the comparatively expensive price of Tesla: 25% of tariff, 0~40% consumption duty and 17% added-value tax are posed on Tesla, making its price 250% more expensive than average.

## 2 Key factors in purchase process (2017)

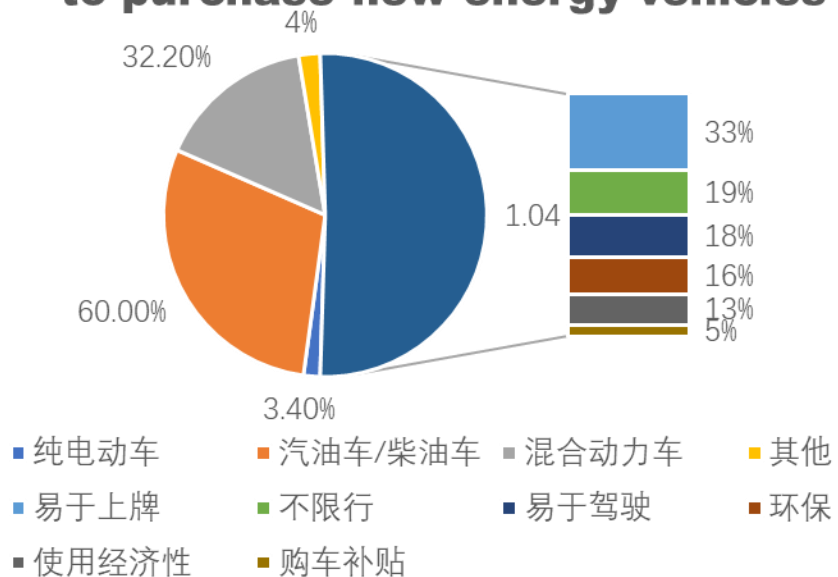


- In such a newly-emerged market, Chinese consumers' primary concern mainly fixes on price. High price of Tesla leads to a decreasing attractiveness in the market.

**Demand side: New policies focus on downstream infrastructure projects facilitate public acceptance of new energy vehicles(NEV) -**

**Demand-heating policies will provide new opportunities and narrow the gap between domestic and foreign corporations**

**Survey on households' willingness to purchase new energy vehicles**

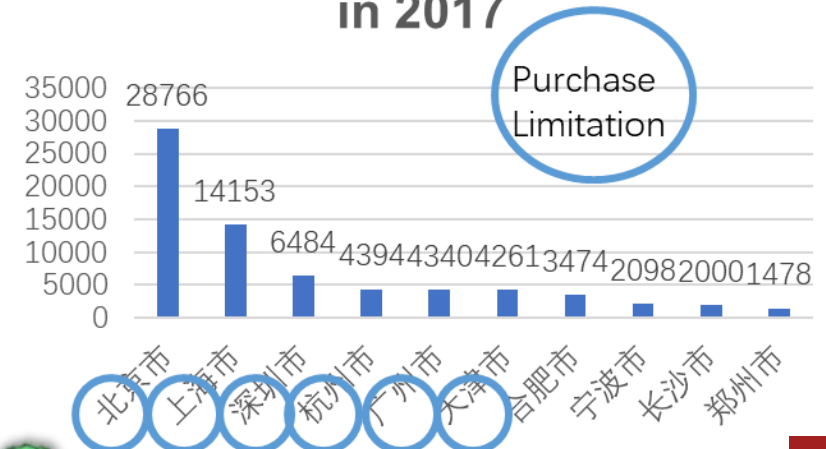


According to the analysis of the willingness to purchase cars in the second half of 2016, the increasing demand is greatly influenced by the policies related to downstream services, including the purchase limitation on private vehicles and the lack of charging infrastructure

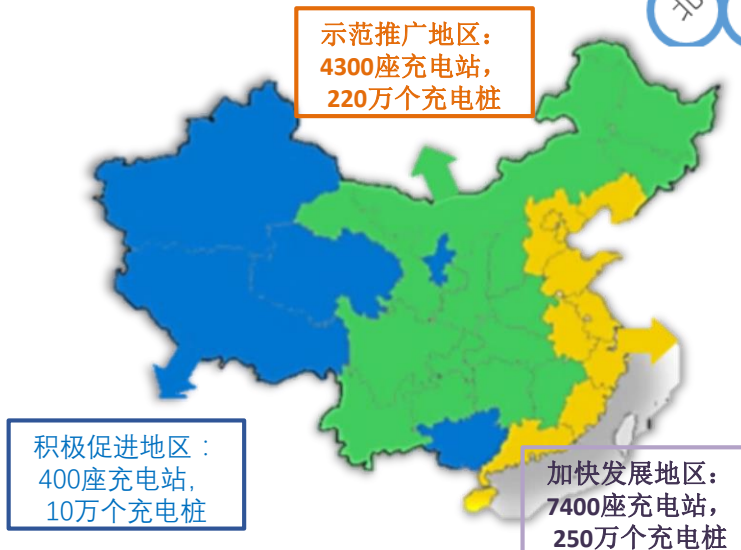
1

TOP 6 cities out of 10 with the highest sales volume have purchase limitation on traditional cars.

**TOP10 cities in selling NEV in 2017**



2



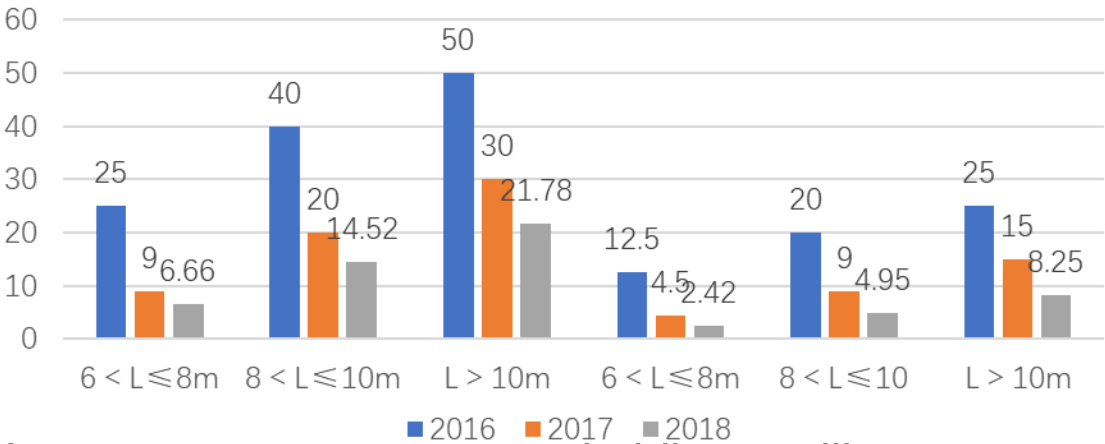
The “Electric Vehicle Charging Infrastructure Development Guideline (2015-2020)” divides the development target of China's charging piles into three regional sub-targets to facilitate power stations.



**Supply side: Decline in government subsidies promotes market transition and weakens price advantage of domestic enterprises -**  
**Demand-heating policies will provide new opportunities and narrow the gap between domestic and foreign corporations**

**1 Government reduces subsidy on NEV**

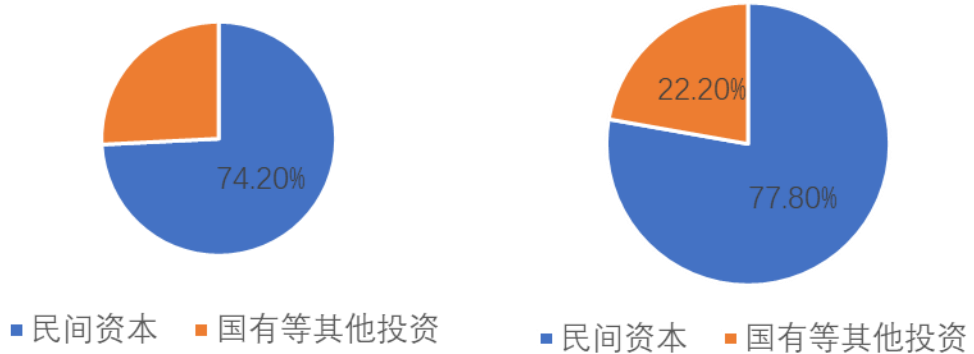
Maximum of Government Subsidies



In 2018, government subsidies ceiling on pure electric vehicles will drop by 27%, the multipower plug-in type by 47%.  
Since *Regulations on the Concurrent Management of the Average Fuel Consumption and New Energy Vehicle* in September 2018, the cash subsidies will gradually be replaced by Double Points System.

**2 Private investment compensates the loss of government subsidy dividends**

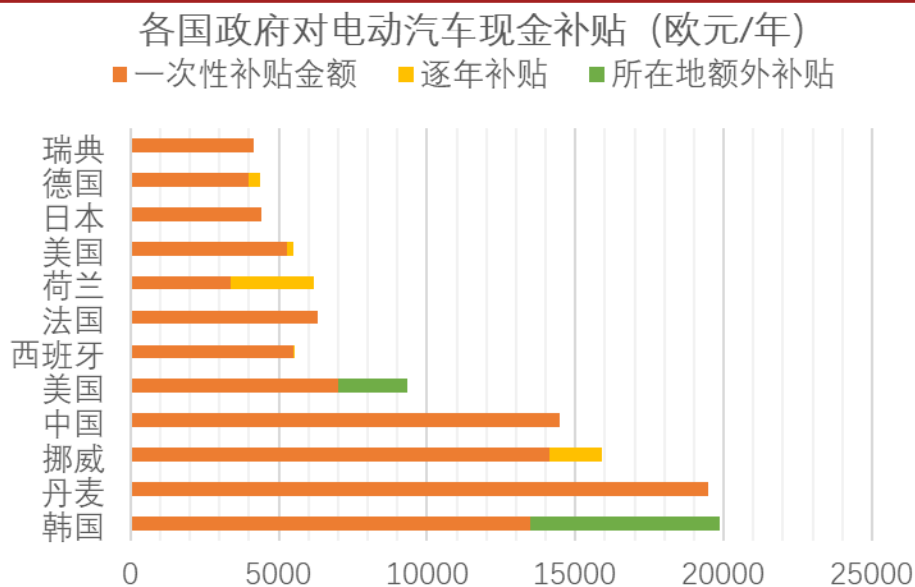
Investment in automobile industry in 2015      Investment in automobile industry in 2016



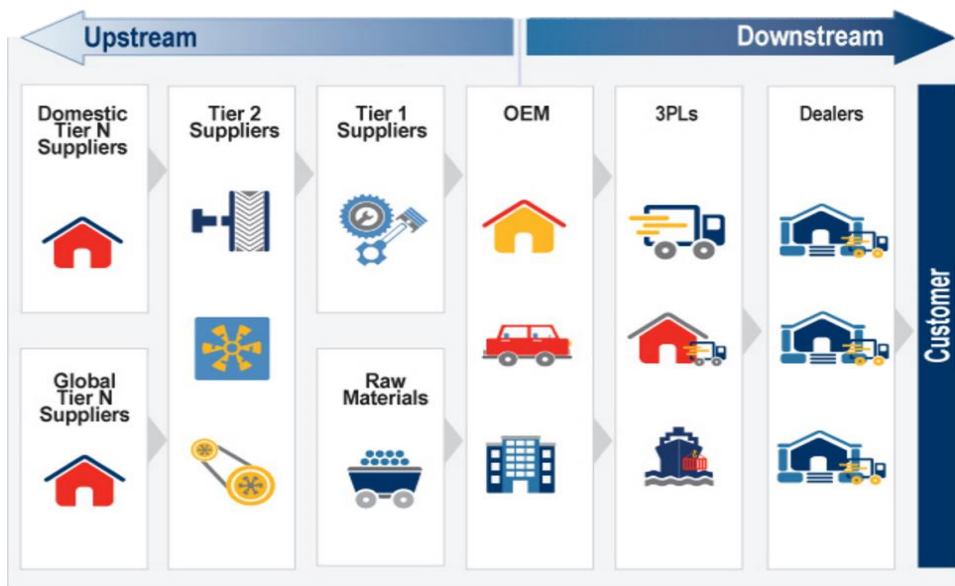
In the first half of 2016, the total absolute investment in automotive fixed assets was 541.9 trillion yuan, an increase of 7%, in which private investment was 421.4 trillion yuan, increasing by 11%, while government and other investments were 120.5 trillion yuan with a 5% decrease.

# Implications on the unsatisfying sales of Multinational Corporations in the previous stage - Policy barriers · High pricing · Supply chain incomplection

## 1 Domestic subsidy policy put foreign companies at disadvantage2 Foreign competitors lacked domestic supply chain



- High subsidy was one of the biggest reasons guaranteed the low price of domestic brands like BAIC BJEV and BYD relative to foreign ones in the past 10 years.
- From our previous analysis, however, with the government adjusting its subsidies from upstream to infrastructure which can benefit the whole industry, but not domestic companies exclusively, the relative advantage is weakening.



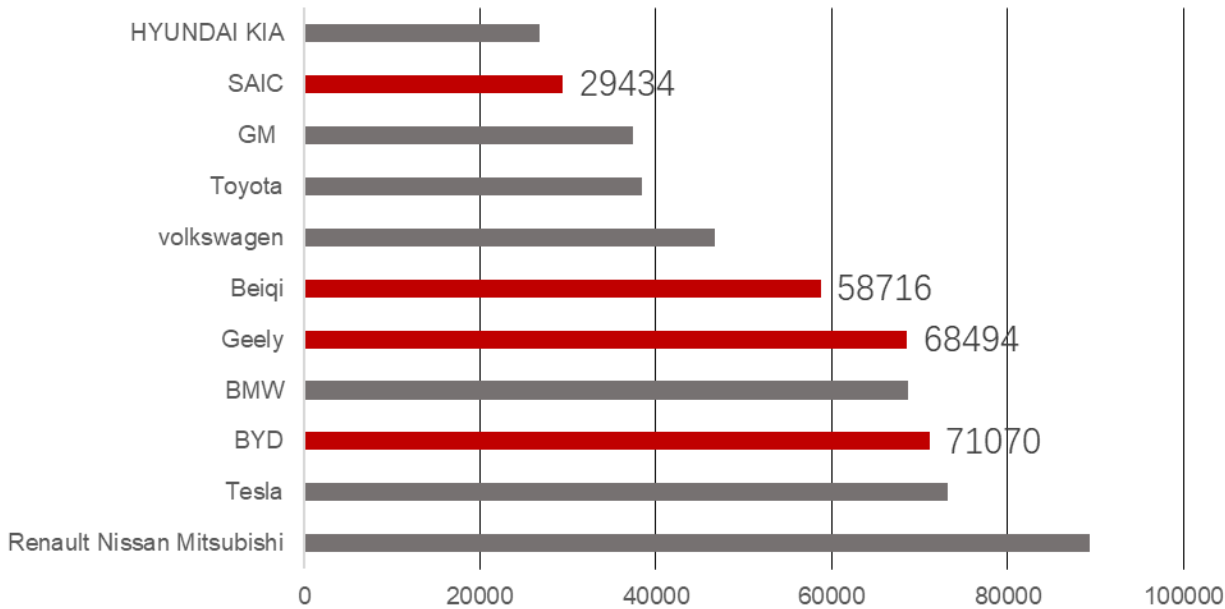
- In the previous stage, multinational competitors are faced with strong monopolies in upstream supply chain domestically. Having not established or controlled a whole supply chain in China, big companies had to import, which lead to high pricing in a sense.

## Competitors -

**Chinese enterprises behave well compared to foreign brands, and in the foreseeable future, the competitions between Chinese local brands will be more fierce**

### 1 Chinese stronger competitiveness in the world

Global electric vehicle sales and market share in 2017



BYD ranks 3<sup>rd</sup> in the global market in terms of its sales in 2017. At the same time, locally produced brands such as Beiqi, Geely and SAIC rank high in the global market.

### 2 Expected sales will reach over 5 million in 2020

#### Automotive OEMs

#### Sales Goal in 2020

Chang'an Vehicle

Accumulated sales: 0.6 million

SAIC

Accumulated sales: 0.6 million

FAW Enterprise

15% market share

Dongfeng Enterprise

Sales: 0.3 million

Guangqi Enterprise

Sales: 0.2 million

Beiqi New Energy

Sales: 0.5 million

Chery Vehicle

Sales: 0.2million

Geely Vehicle

2 million; New energy car sales account for 90% of total sales in 2020



## Facing an increasingly outsider-friendly market - More foreign competitors are likely to enter & capture market share

### 1 Current tariff policy on imported vehicles

发动机排量	关税税率	增值税率	消费税率	综合税率
1.0升及以下 (含1.0)	25%	17%	1%	47.73%
1.0-1.5 (含1.5)	25%	17%	3%	50.77%
1.5-2.0 (含2.0)	25%	17%	5%	53.77%
2.0-2.5 (含2.5)	25%	17%	9%	60.71%
2.5-3.0 (含3.0)	25%	17%	12%	66.19%
3.0-4.0 (含4.0)	25%	17%	25%	95.00%
4.0以上	25%	17%	40%	143.75%

### Insights

- Although the heavy tariff has posed a heavy burden on foreign competitors, good news shows that taxes are going to decrease.
- During Boao Forum of Asia in 2018, China announced that it will have a step-by-step decrease on tariff, which will be gradually declined to 10%. Such a decrease makes the market a more welcoming one for foreign competitors to crowd in.

### 2 Tesla's current allocation of charging piles

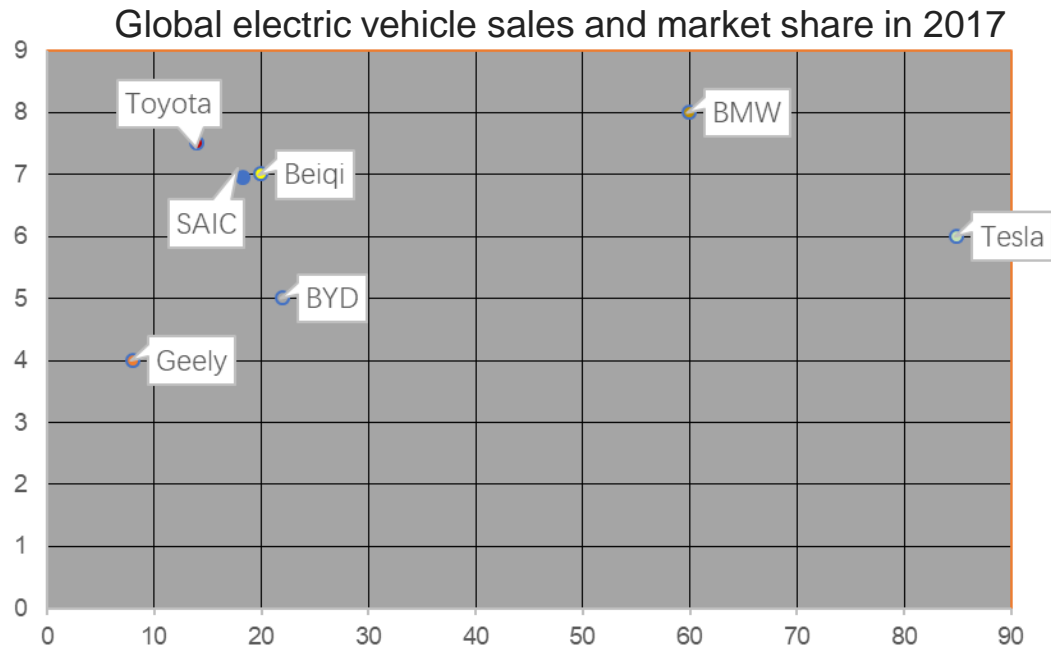


- Under China's increasingly open attitude towards this industry, foreign competitors are also developing their business into an more in-depth and local one. By planning to establish factories in China, improving local infrastructure and services, they are growingly more competitive rather than being neglectable in this market.

Competitors -

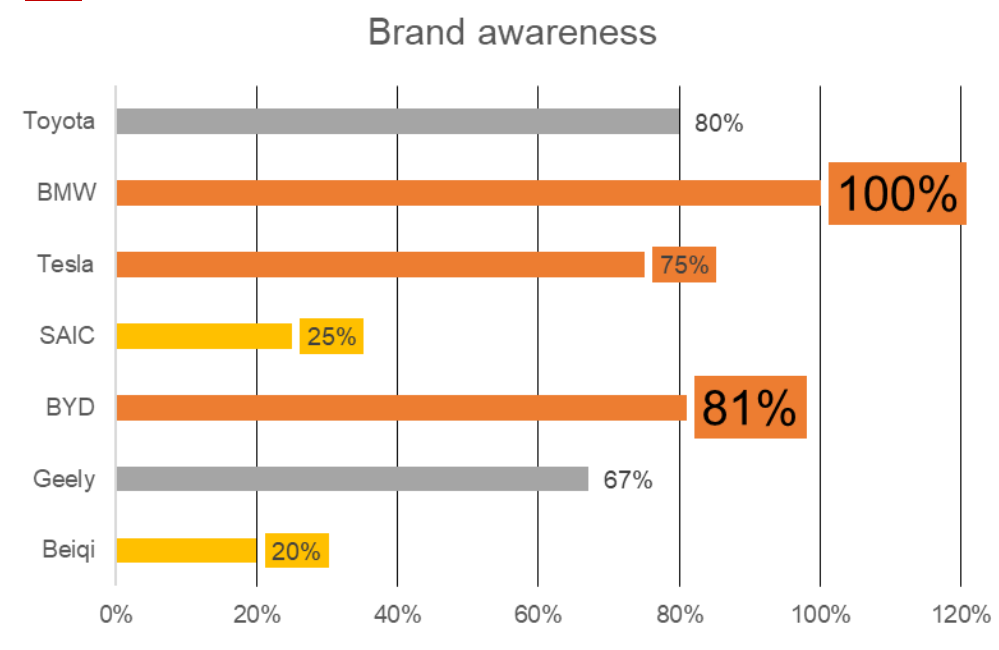
Chinese and foreign brands can target different types of customers in the future; low brand awareness of Chinese brands may be a threat of their development

1 Foreign and Chinese brands should target customers with different incomes



The prices of Chinese brands are relatively low compared to foreign ones; however, customers' value awareness measured at their price level varies less, which gives us an insight that Chinese and foreign brands can target consumers with different incomes in China in the future.

2 Low brand awareness of Chinese brands

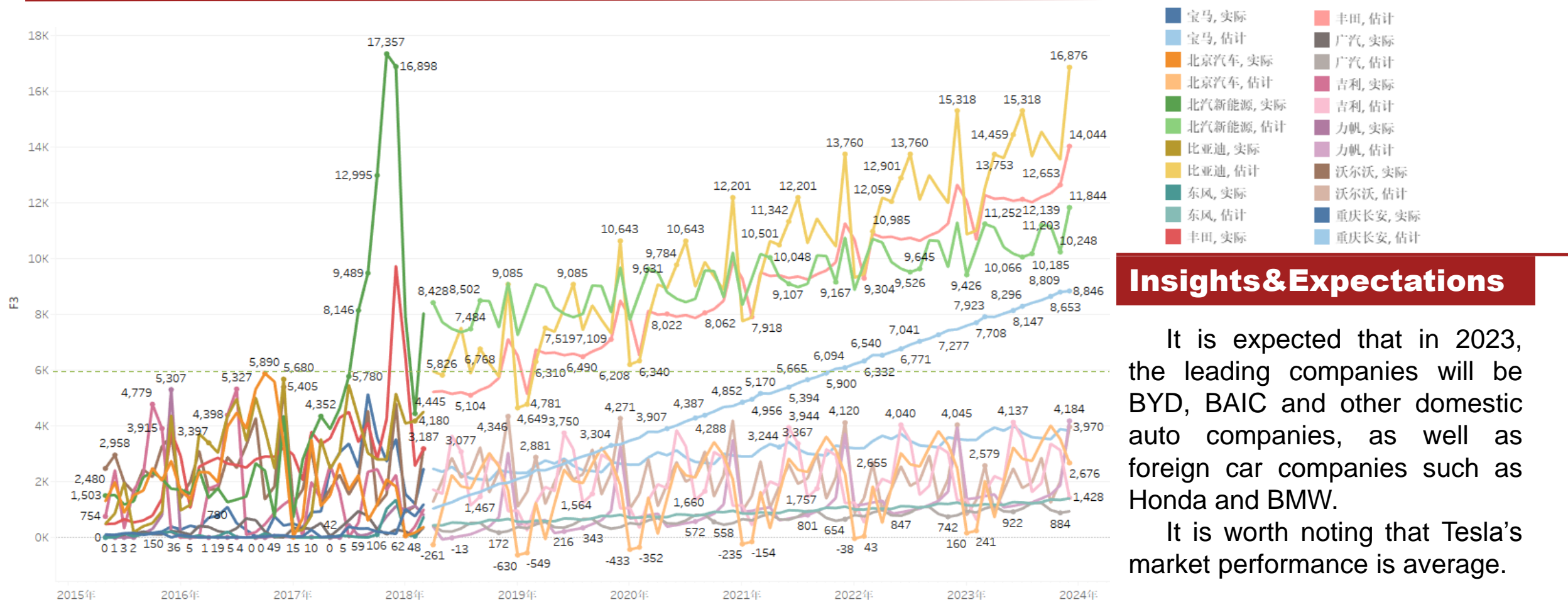


We can clearly see that foreign brands have much better brand awareness among Chinese consumers. It is important for Chinese brands to improve their brand awareness in these years.

Industry Predict -

Industry-wide producers will be divided into two tiers in 2023 with a sales volume of 6,000 per year

1 The Future Performance of Current Enterprises



Insights&Expectations

It is expected that in 2023, the leading companies will be BYD, BAIC and other domestic auto companies, as well as foreign car companies such as Honda and BMW.

It is worth noting that Tesla's market performance is average.



# Acknowledgements

The content of this article is from public data compilation, financial report analysis, securities industry report, Wind Database, and Bloomberg database. Thanks in this regard.

Thanks to the guides provided by relevant people from the industry and the professors of the college for their help with this report, and thanks to the panelists for their contributions to this report.

To contact with our team members for further discussion, please contact email address [xingyf6@mail2.sysu.edu.cn](mailto:xingyf6@mail2.sysu.edu.cn)

For more detailed data information in the report, please contact the email address as [xingyf6@mail2.sysu.edu.cn](mailto:xingyf6@mail2.sysu.edu.cn)

Thank you for reading!