Electric Vehicle Development in China and Market Responses to Phasing Out Incentives

Xiang Zhang

Ph.D. & Professor
Beijing Institute of Technology
Visiting professor, UC Davis
xiangzhang@bit.edu.cn

June 18, 2019
Roadmap 12, Portland, OR, USA
Outlines

1. EV development
2. Market responses to phasing out incentives
3. Takeaways
1. EV Development in China

EV sales in 2018

✓ 1,143,055 EVs
✓ 4.1% of total new vehicle sales
1. EV Development in China

Position in the world in 2018: 56% of world EV sales

Source: www.ev-volumes.com/country/total-world-plug-in-vehicle-volumes
1. EV Development in China

From pilot cities to nationwide adoption

13 cities in 2009
25 cities in 2010
61 cities in 2013
88 cities in 2014
countrywide in 2016
1. EV Development in China

Phasing out subsidies

Subsidy phasing out in China

For illustration only
1. Similar Challenges

White House seeks to end subsidies

WASHINGTON (Reuters) - White House economic adviser Larry Kudlow said on Monday the Trump administration wants to end subsidies for electric cars and other items, including renewable energy sources.
1. Similarities

**China and US share some common points**

<table>
<thead>
<tr>
<th>Policies</th>
<th>China</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>range</td>
<td>involved 31 provinces</td>
<td>involved 50 states and D.C.</td>
</tr>
<tr>
<td>levels</td>
<td>national + local incentives</td>
<td>national + local incentives</td>
</tr>
<tr>
<td>clear phasing out schedule</td>
<td>started in 2013, complete in 2020</td>
<td>200,000 cap per company Tesla: January 1, 2019 GM: April 1, 2020 Nissan: 2021; Toyota: 2021 a new bill intent to remove the cap for EVs and expand it to 2022</td>
</tr>
</tbody>
</table>

Note:
1. Data collected till May 18, 2019.
2. Data includes PEVs and PHEVs.

Source:
2. Market Responses

How will the market respond to phasing out incentives?
2. Market Responses

Reducing incentives reduced sales in Denmark

Sales of electrically chargeable vehicles have plummeted amid confusion over tax breaks

2. Market Responses

Reducing incentives reduced sales in Georgia

2. Market Responses

Phasing out subsidies had short-term impacts

Month

Subsidies impacts
Seasonal impacts

Monthly volume

2014 sales  2015 sales  2016 sales  2017 sales  2018 sales
2. Market Responses

(1) 7 plate-controlled cities accounted more than 40%
✓ Impacts of local plate-controlled policies are equal or more than those of incentive policy, but not the first best option

Non-controlled cities vs Plate-controlled cities

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-controlled Cities</th>
<th>Plate-controlled Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>2016</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>2017</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>2018</td>
<td>59%</td>
<td>41%</td>
</tr>
</tbody>
</table>

2. Market Responses

(2) Increase of public awareness

(3) The rising consumers’ environmental awareness

However, increase in perceived inconvenience of vehicle charging will
- reduce about 25% the perceived environmental benefits,
- reduce about 15% of the perceived subsidy benefits.
Leading to a reduced EV purchase intention.

2. Market Responses

(4) Consumers’ price increase tolerance
- on average, 42.3% consumers can bear maximum 5% price increase when telling them EV’s environmental benefits, 39.3% hoped within 10%
- In exchange, they require more air quality improvements

2. Market Responses

(5) Consumers’ view of the future EV development
- 94.68% of consumers think the future is promising

Local plate-controlled policies, increasing public acceptance, consumers’ environmental awareness, price tolerance, and expectation, in addition to other measures, can help develop the EV market during subsidies phasing out period.

In post-subsidy era, attentions shall be paid to:
- technology advancement
- batteries recycle and reuse
- charging infrastructure
- more application scenarios + new business models

By the year 2020, the goals are
- 2 million new EV sales a year
- EV market will be 1,450 billion USD
- Charging infrastructure market will be 14.5 billion USD
20% in 2025, 40% in 2030, 50% in 2035
Thank You!