

THE EFFECTIVENESS OF ELECTRIC VEHICLE POLICIES IN CHINA: EMPIRICAL EVIDENCE FROM 88 PILOT CITIES

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Overview

Promoting the usage of electric vehicles (EVs) is regarded as an important strategy for controlling the CO₂ emissions by transportation sector in China. China government has released a series of policies to promote EVs' deployment. Several earlier studies have contributed to examining the impact of EV policies on their sales in China. However, these studies are based on either sectional data or the data for few cities, which may not reflect the policies' time-effects and aggregate performance at state level. In addition, China has been releasing the purchase subsidy phase-out policy since 2013. This new policy may also have a significant impact on the diffusion of EVs. The present study contributes to analyzing the operational mechanism behind various incentive policies by combining the static and dynamic regression models based on panel data from 88 Chinese pilot cities. It is expected that our empirical results can provide analytical foundation for designing more targeted EVs promotion policies.

The framework of this study is as follows. We build both the static and dynamic panel data regression models after the introduction and provide the results in the third section. Policy suggestions are provided in the final section.

Methods

1. Models

We use both static and dynamic panel data regression models in this paper.

2. Data sources

We refer to the policy documents during Jan.1st 2014 to Aug. 31st 2015 of all the 88 EV demonstration and promotion cities in China primarily from the city governments' official websites. Subsidy values and EV sales volume are from the traffic management bureau of each city and Ministry of Industry and Information Technology.

Results

First, purchase tax exemption, charging discount and infrastructure construction subsidy all have obvious influence on EV sales and the effect of charging discount is relatively strong than the other two. These three policies can meet consumers' needs directly so that they can get a good feedback.

Second, purchase subsidy policy does not have a significant effect on EV sales. Vehicle companies are likely to promote EVs' prices and cheat the government out of EV purchase subsidies without stringent punishment regulations published.

Third, model development award policy does not have a significant effect on EV sales either. Car companies may think it needs more to be invested to develop more advanced models than awards they can get from the government. So model development will be lagged and car companies may not cater for consumers' needs and relieve consumers' worry about EVs' performance.

Fourth, manufacturing award policy shows a negative influence in the EV promotion. A possible reason is that such policy tends to stimulate manufacturers to put more emphasis on production quantity rather than quality in order to get more manufacturing awards. As a result, EVs can not get a good WOM and consumers are always not satisfied with or even worry about EVs' quality in the market.

Fifth, EV sales have significant dynamic effect, which reveals time lag of the local policies and predecessor period EV sales' continuous and viscous effect on current period's EV sales.

Sixth, parking benefit policy's influence changes between the static and dynamic panel regression and does not have significance shown in the dynamic panel regression result mainly because the effect of it is included in the lag term of EV sales.

Conclusions

Local governments are suggested to keep the purchase tax exemption, charging discount and infrastructure construction subsidy. They should strengthen the supervision of the implementation of these policies when promoting purchase subsidy's phase-out process. Furthermore, they need to promote the implementation of model development policy because this policy may come into effect in the long run. Car companies should pay more attention to the technology innovation rather than focus on enlarging the quantity. Manufacturing awards should be reduced gradually and governments need to forcefully implement the "Double integration policy" which refers to the corporation average fuel consumption integrals and NEV integrals policy published in September in China to encourage companies to develop and produce more advanced EVs and reduce the production of high energy consumption vehicles.