

How Do Public Policies Shape the Electric Vehicle Charging Market in Europe?

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1 Introduction

- Public charging network is needed to facilitate transition from internal combustion engines to electric vehicles.
- Multitude of policies aim to support the establishment of network.
- Which ones are effective? How do they impact structure of market?

2 Selected hypotheses derived from theory

- Policies are generally positively associated with the density of the local public charging grid.
- Targets for installations are particularly positively associated with publicly-owned investors, as compared to privately-owned ones.
- Subsidies for the installation of stations provided on request are more likely to target smaller investors and lead to more technological differentiation than subsidies provided by tenders.
- Mandates to build private charging stations near apartments and offices are accompanied by larger public charging networks.
- Publicly-owned investor activity is associated with a denser network at low maturity of the market.

3 Data

- We plan to establish a **panel dataset of >500 European cities** with more than 100,000 inhabitants (Eurostat 2022).

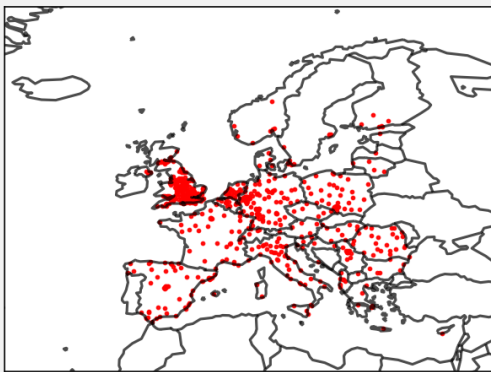


Fig. 1. Map of relevant cities in Europe.

- We assemble **geolocational information on charging stations** in these cities from national and local authorities.
 - Includes: Location, charging capacity, investor/charging station operator, market concentration, installation date
- We collect **policies** from Bloomberg New Energy Finance, International Energy Agency, and relevant authorities.
 - Includes: Policies of different administrative levels targeted at the establishment of public charging infrastructure for electric vehicles

4 Research approach

1. **Establish panel data** set of charging stations and policies
2. **Classify policies** according to categories leveraged in the hypotheses

Categories:

- Types of policies, as suggested by Hood 1983
- Station-level versus network-level
- Local versus cross-regional
- Public charging versus other types of charging

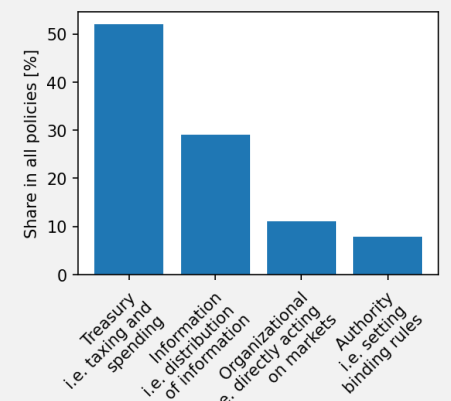


Fig. 2. Classification of considered policies (BNEF, IEA) according to Hood (1983).

3. **Empirically investigate impact of policies using regression**

Dependent variables:

- Number of stations
- Number of stations of publicly- or privately-owned investors
- Market concentration of charging station operators
- Share of fast- versus slow-charging stations

Methods:

- OLS, with and without instrument for number of electric vehicles
- GMM, controlling for temporal correlation by including lagged number of stations
- Synthetic control

5 Conclusion and expected impact

- Policy makers have introduced various policies aiming to establish a public charging grid.
- We aim to investigate:
 1. To which extent different policies are effective in establishing a charging grid.
 2. How the choice of policies impacts the observed market structure (i.e. market concentration or investor type).
- Results will inform policy makers about how to spend public funds most effectively as well as required regulation.

References

1. Eurostat (2022): Local Administrative Units
2. Bloomberg New Energy Finance data
3. International Energy Agency: Policy database
4. Hood (1983): The Tools of Government (London: Macmillan)