The sunny side of green transport policies

C. Colesanti Senni and N. Reidt

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Discussant: W. Sand-Zantman (TSE)

Summary

- This paper studies how taxes and subsidies should be design to solve/mitigate various inefficiencies.

- This is done is a setting where a platform manages on one side electric vehicles (EV) and Gas vehicles (GC) and on the other charging stations (EVCS).

- The main result is that public policies can at the same time increase economic welfare and reduce the negative impact of pollution.

  Idea: the decentralized mix between EV and GV is not efficient and taxes can improve this mix and decrease carbon emissions.

The Model

This model has 4 main components

1. Two-sided market setting with one platform.
   Vehicles (EV and GC) sold to consumers on one side and EVCS to retailers on the other.
2. Multiproduct on one side and single product on the other side.
   Consumers may buy EV or GV and retailers only buy EVCS.
3. Some cross-side externalities
   Between EV and EVCS, both for consumers and retailers.
4. Some environmental damages proportional to the nb of GV.

Results

- The platform chooses its price to account for most externalities.
- But it does not take consider the environmental externality generated by the GV so the ratio of EV to GV is too high.
- Subsidies on EV, on EVCG and taxes on CV lead to ”better” levels of EV, GV, and ECCG.
- The decrease in the number of GV can lead to increasing economic welfare (platform profit+ retailers' profit + consumer surplus) and social welfare (economic welfare +environmental damages).

  It is the **double dividend result**.

Main Comments

- Important topic and nice to read.

  My Main Remark: how heterogeneity is dealt with?

1. Both at the consumers and retailers level, all the agents seem to be identical.
   - In this case, the platform should use non-linear pricing as this will some most problems.
   - The only remaining inefficiency will come from the carbon emissions but there will be no double-dividend any more.
2. But the issue of the acceptability of environmental policy comes from the divergence of interest in society
   - It would be nice to insist more on this aspect.
   - This would also explain the pricing inefficiency and the conflicts in society over environmental choices.

Minor Comments

1. The substituability/complemetarity/externality effects are exogenous.

   In particular γ_1, γ_4 but also α_f should be micro-founded (supply and demand?)

2. The inefficiency results are framed in terms of ration EV/GV. But the optimal ratio does not mean the optimal number...
3. The notations are sometimes confusing and far from being intuitive.