Reducing Transportation CO$_2$ Emissions in Europe – Some Reflections

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Fuel Economy / CO₂ Emission Standards

• CO₂ standard (g/km) appropriate for Europe due to two fuel types (gasoline & diesel)
  - But has to be revised as hybrid & electric vehicles enter the market

• Standards probably inferior to fuel/carbon taxes from an economic perspective
  - But are a realistic solution, “a trade-off between lower political costs and higher economic costs”

• EU legislation is full of derogations and loopholes that may cancel out some environmental benefits
Fuel Taxes

• The most effective environmental measure in EU

• Affect both the choice of car and the use of the vehicle (help avoid rebound effect even if small)
  – But are higher than the climate & energy security externalities they are supposed to tackle

• Economically optimal solution would be a uniform carbon tax on all economic sectors, combined with distance-based vehicle taxation (for internalizing other externalities e.g. congestion & accidents)

• Same fuel tax treatment of both gasoline and diesel fuel is necessary – currently not the case in Europe, may change with new EU Energy Tax Directive
Vehicle Taxes

- Very different across European countries; taxation is considered a matter of national sovereignty; in most countries vehicle taxes are not fuel-neutral
- But currently most countries base vehicle taxes – at least partly – on CO₂ emissions
- Current taxation schemes in many European countries imply very high costs per ton of carbon
- Company car taxation is different; may compromise the effectiveness of such policy instruments
Feebates - A promising type of vehicle tax?

• Cars emitting CO$_2$ above a threshold (e.g. 130 g/km) pay a fee; those emitting less than the threshold receive a rebate

• If tax rate is constant (for each g/km) then marginal compliance costs are equalized across all car models; probably the economically efficient outcome
  - But most current systems do not apply constant tax rates

• If threshold decreases over the years, feebates provide a credible long-term price signal that can stimulate innovation – technology-neutrally
  - Can convince economists because the cost of carbon emissions increases over the years
Features of Feebates

- Market-based instrument
- Equivalent to a flexible fuel economy / CO₂ standard
- Oriented to consumers because they directly affect car prices, in contrast to standards that impose an obligation on the supply side
- Can be designed to be revenue-neutral
  - But current real-world applications (e.g. Netherlands, France, Ireland) turned out to be costly for governments
- Not detrimental to consumer ‘welfare’: consumers can shift to low-carbon cars in the same segment
- Impressive results from implementation in France & Norway: significant drop in new-car CO₂ emissions
Conclusions for real-life policy choices

• Apply combinations of policy tools – sometimes
• Regulate energy use in the future, rather than CO₂
• Harmonize taxes across countries as much as possible
• Offer technologically neutral incentives, maybe with cautious short-term support to some promising technologies
• Apply continuous functions of incentives (e.g. constant tax rates); avoid thresholds and notches
• Treat private and company cars in the same way
• If necessary, allow for different treatment according to vehicle size (footprint), not vehicle weight
• Costs should be close to the social cost of carbon
Thank you, Lee Schipper