# Addressing horizontal distributive effects from energy taxes

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# Energy taxes and lump-sum transfers

- For a long time, research on distributional effects of energy taxes focused on vertical (i.e., income) dimension.
  - ➢ Takeaway: carbon/energy taxes are regressive, but a uniform lump-sum transfer leads to progressive policy.
    - ▸ See figures

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- More recently, evidence that distributional effects are even larger *within* income groups (e.g., Cronin et al, 2019; Douenne, 2020).
  - ➤ Theoretical solution: use more targeted transfers.
  - ➤ Problem 1: a precise targeting seems impossible (Sallee, 2019; Douenne, 2020).
  - ➤ Problem 2: the more precise it is, the less effective the tax is at incentivizing behavioral changes.
    - ▸ See figures

# How to deal with horizontal distributive effects?

- Adjusting energy taxes relative to their "Pigovuian" level?
  - ➢ Douenne et al (2023): optimal tax paper, shows that taxes on energy should be adjusted for $\text{cov}(\bar{d}_i, 1/u_{c,i})$, i.e. covariance between energy needs and relative welfare weight.
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- To tackle horizontal distributional effects, need to identify people at the intersection between poverty (high $u_{c,i}$) and high energy needs (high $\bar{d}_i$).
  - ➤ Solution: use policies with costly take up rate (e.g., thermal insulation subsidies) to "reveal" those with high energy needs, and make them conditional on resources.
  - ➤ Problem: the costs need to be low enough to reach people in need, but high enough to identify those who need it the most (type I vs type II error).

## Discussion

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- But if some people lose more than others because they pollute more, should we fully compensate them?

- Whether someone gains or loses from environmental policies is often associated with past investments (e.g., house in the countryside). If we consider the policy as an unexpected change of the rules of the game, we do not necessarily want these people to be "punished".

  ➢ A related fundamental question is to what extent people are actually responsible for their own pollution. Very subjective!

  ➢ Major implications for public support to energy policies.

# References

1. Cronin et al, 2019, JAERE, "Vertical and horizontal redistributions from a carbon tax and rebate".

2. Douenne, 2020, En J, "The Vertical and Horizontal Distributive Effects of Energy Taxes: a Case Study of a French Policy".

3. Douenne et al, 2023, "Optimal Fiscal Policy in a Climate-Economy Model with Heterogeneous Households".

4. Sallee, 2019, NBER WP, "Pigou creates losers: On the implausibility of achieving pareto improvements from efficiency-enhancing policies".
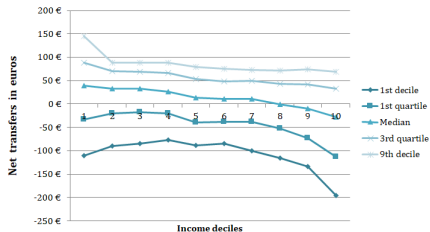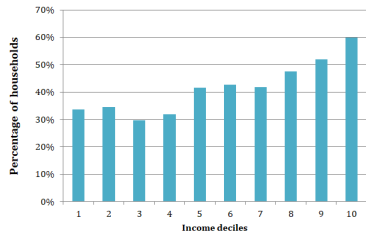
# Vertical distributive effects
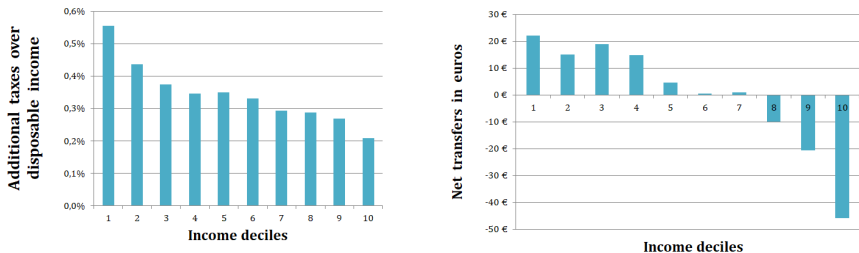


Figure: Distributional effects from the French energy policy reform 2016-2018 before (left) and after lump-sum transfers (right). Source: Douenne, 2020.

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# Horizontal distributive effects



Figure: Share of households financially losing from the French energy policy reform 2016-2018 after an hypothetical uniform revenue-recycling (left), and distribution of net transfers per consumption unit (right) (from Douenne, 2020)

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