Carbon taxation in Ireland. Distributional effects of revenue recycling policies

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Presentation plan

- Motivation
- Literature
- Data and Estimation strategy
- Results

Motivation

- Ireland is not on track to meet climate targets
- Pigouvian taxation is a corrective tax which aims to correct for externalities

Oireachtas Committe on Climate Action recommends an increase in the carbon tax.

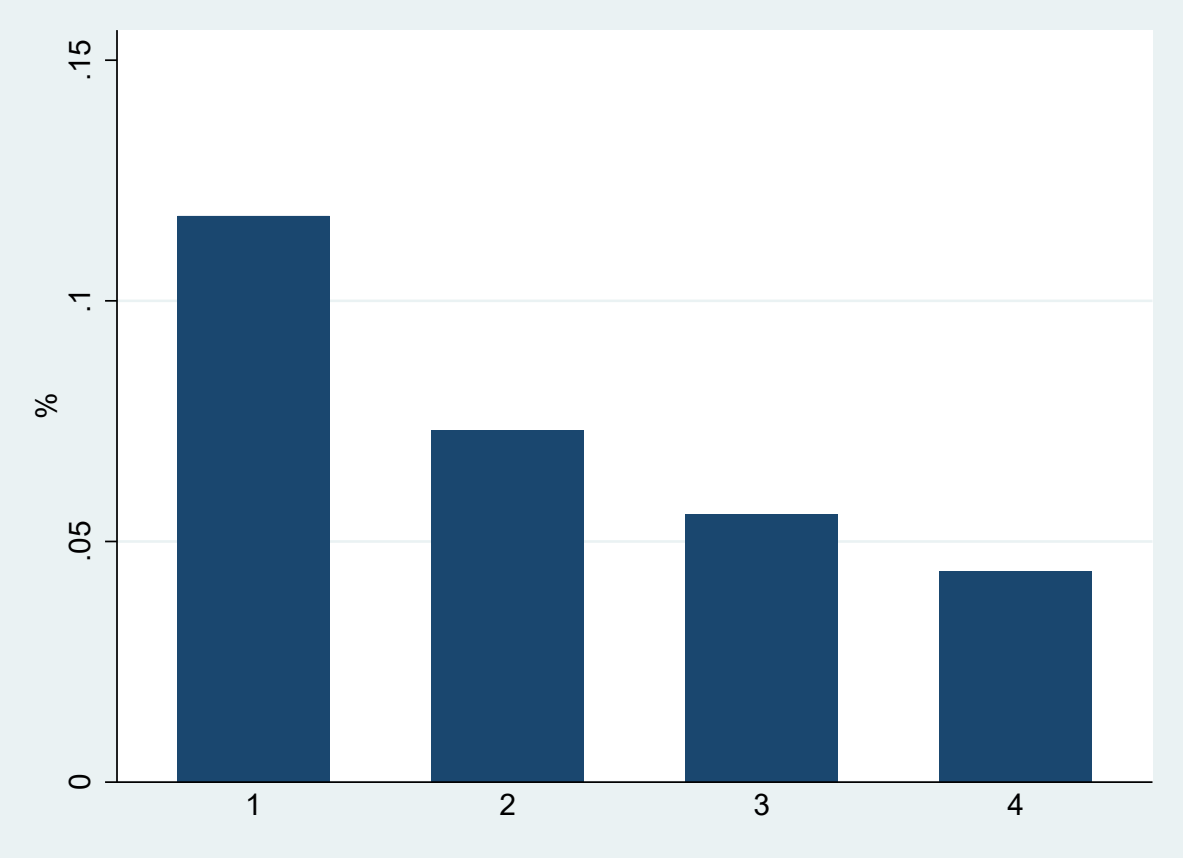
Motivation

- Concerns remain: impact on vulnerable households
- Most of the existing literature finds that carbon taxes are regressive
- Only few papers analyze the re-distributional effects of carbon tax revenues

Key findings

- 3.94% for tax increase of €30 per tonne
- 10.24% for tax increase of €80 per tonne
- Poorer households pay more - policy is regressive
- A flat allocation is OK but more can be done

Budget share of energy consumed in the residential sector by income quartile



Research questions

- What are the environmental effects of carbon taxes?
- What are the distributional effects of carbon taxes?
- What are these effects across households of different income levels?
- Is there a tradeoff between environmental and distributional policy?
- How can we compensate for possible regressive effects?

Irish carbon tax research to date

- Scott and Eakins (2004) found that a combination of lump-sum transfers, income tax and welfare payments can compensate from the regressive nature of taxes
- Callan et al. (2008) found that households can be compensated though welfare payments with a maximum of 80% of tax revenue.
- de Brun and Yakut (2018) find that carbon taxation reduces carbon consumption, but is regressive (using simulated representative households)

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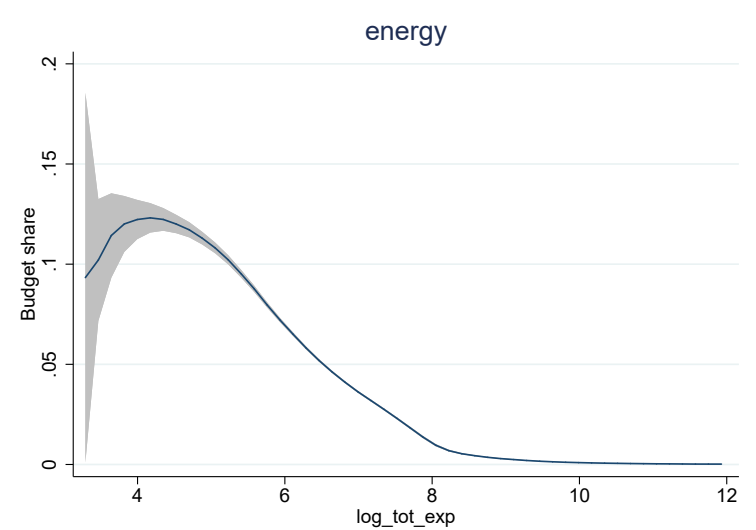
- The missing link: **environmental** and **distributional** effect of carbon taxation on **real households**

Demand system

- Use data from the Household Budget Survey (real households) to examine how expenditure changes with prices
- From this, estimate how expenditure **would** change due to a change in prices from carbon taxation
- New methodology allows significant flexibility in how we represent expenditure patterns
- Examine the impact of different recycling mechanisms


energy
Budget share
0
.05
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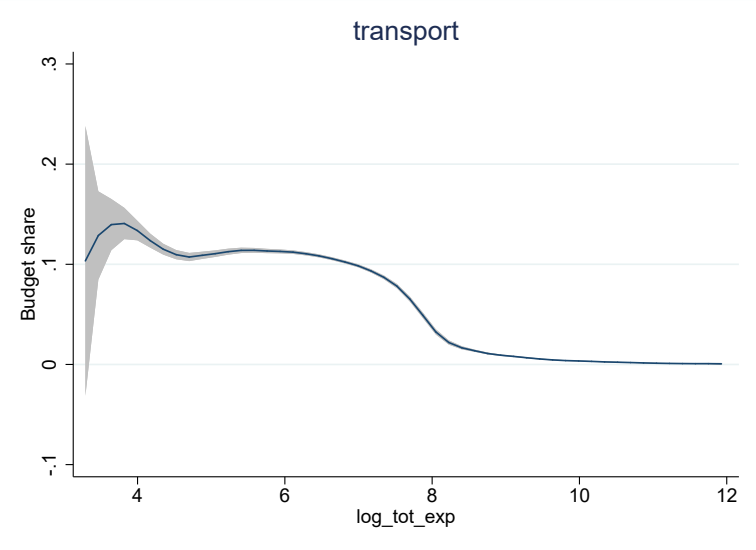
.15
.2
4
6
8
10
12
log_tot_exp


transport
Budget share
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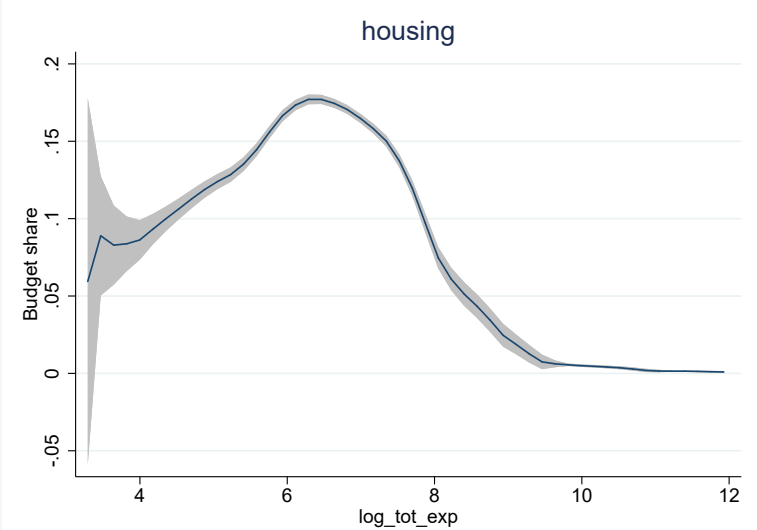
12
log_tot_exp


housing
Budget share
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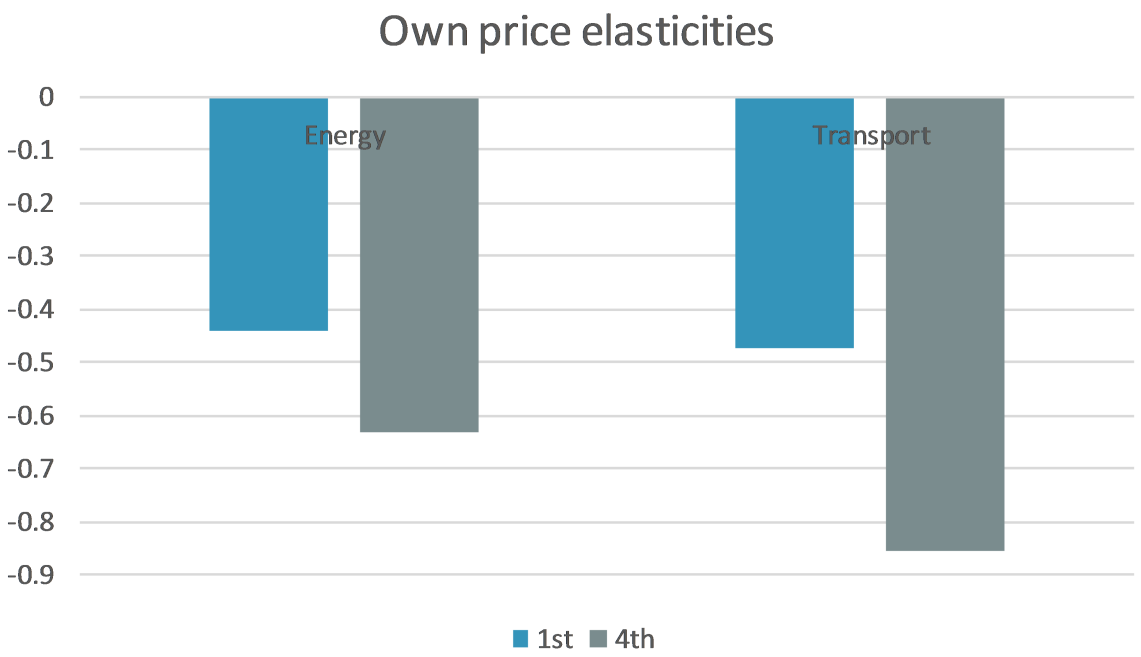
12
log_tot_exp

Own price elasticities by income quartile



- Two carbon tax scenarios considered:
  1. Increase by €30 per tonne (to €50 per tonne)
  2. Increase by €80 per tonne (to €100 per tonne)
- Two revenue recycling mechanisms considered:
  1. Flat allocation: equal payment to every household (analagous to 'carbon cheque')
  2. Targeted allocation: recycle to all households, but give more to lower income households

Carbon tax reductions of:

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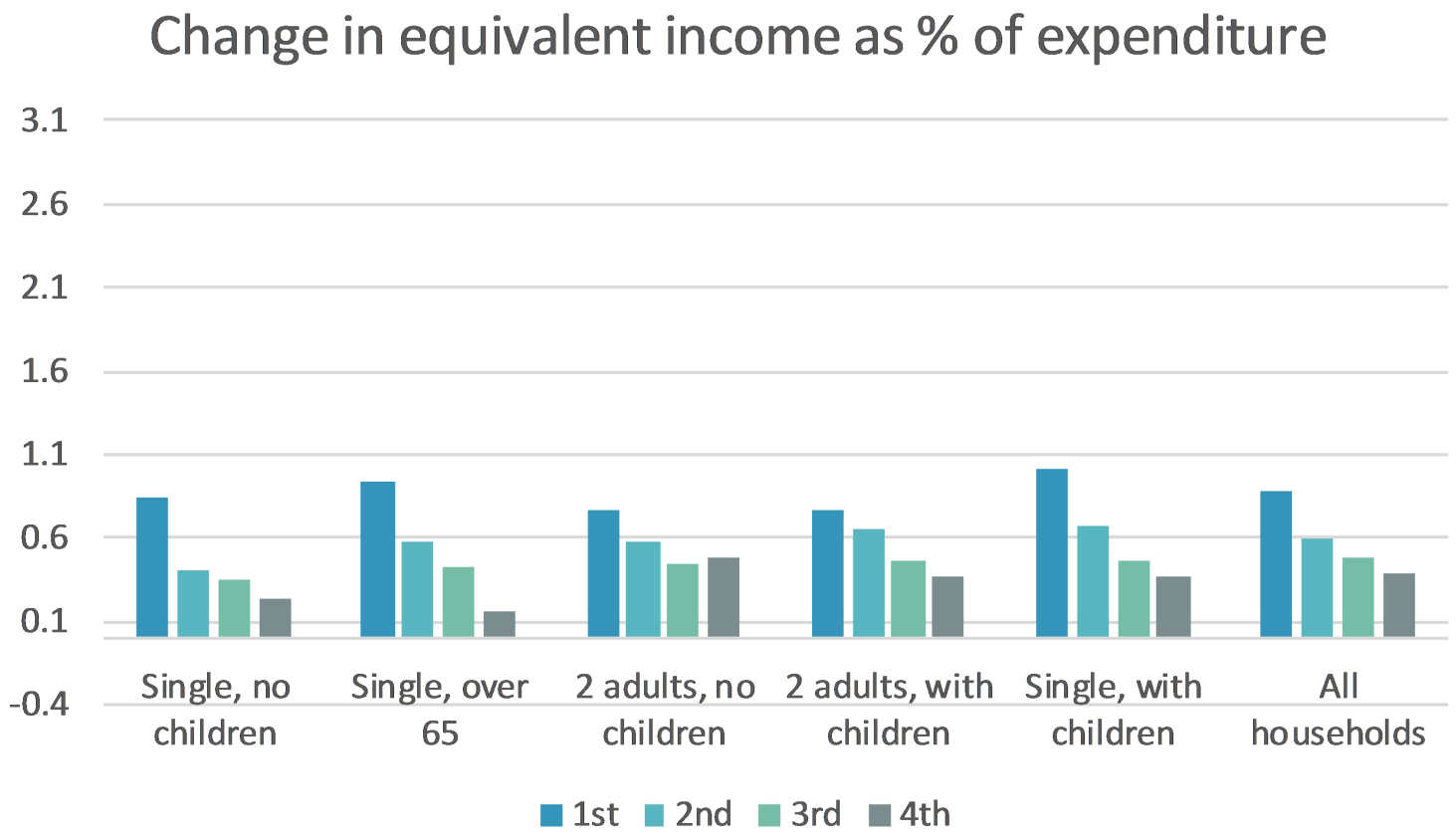
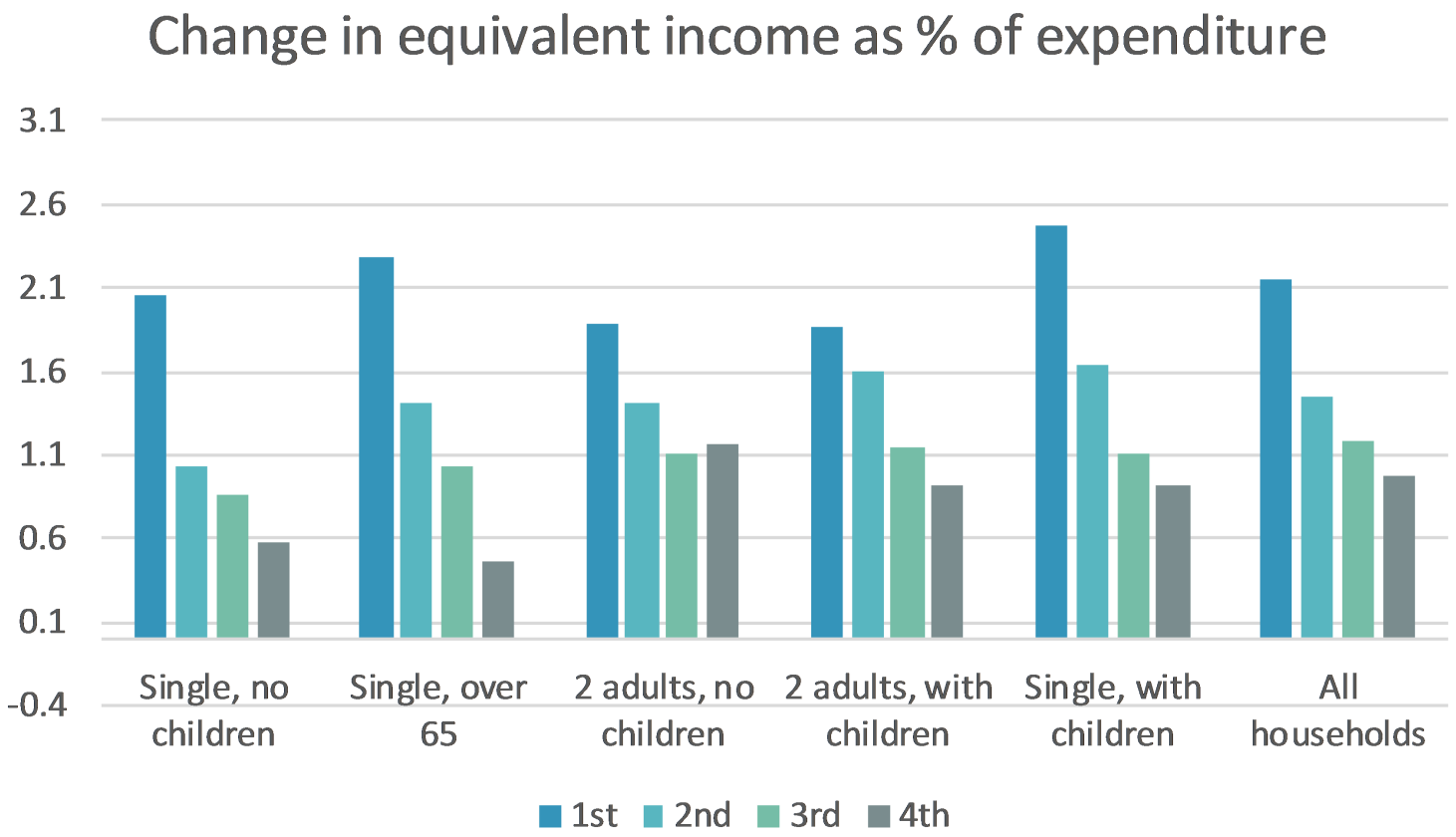
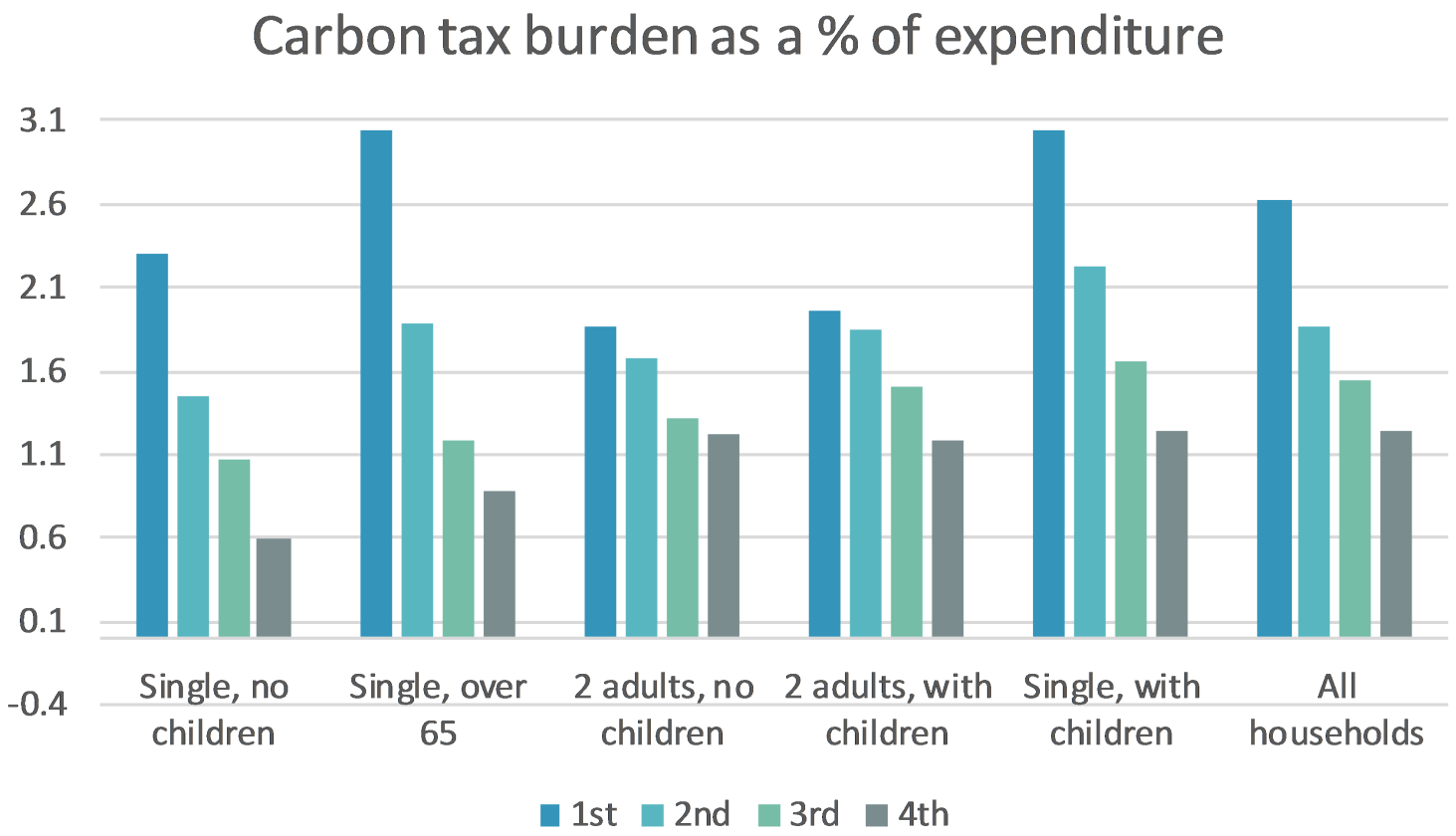
€50 carbon tax burden with behavioural response:



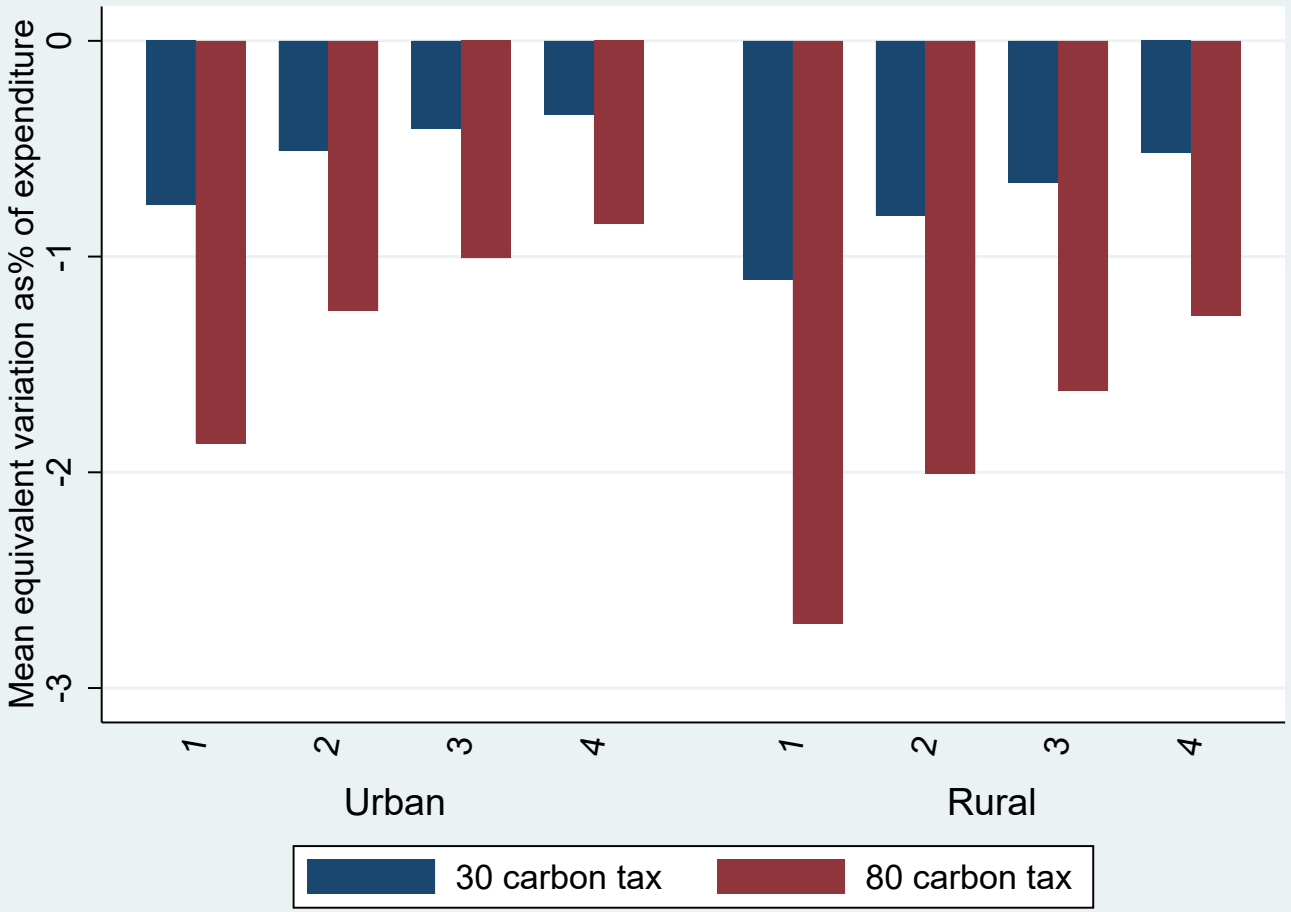
€100 carbon tax burden with behavioural response:



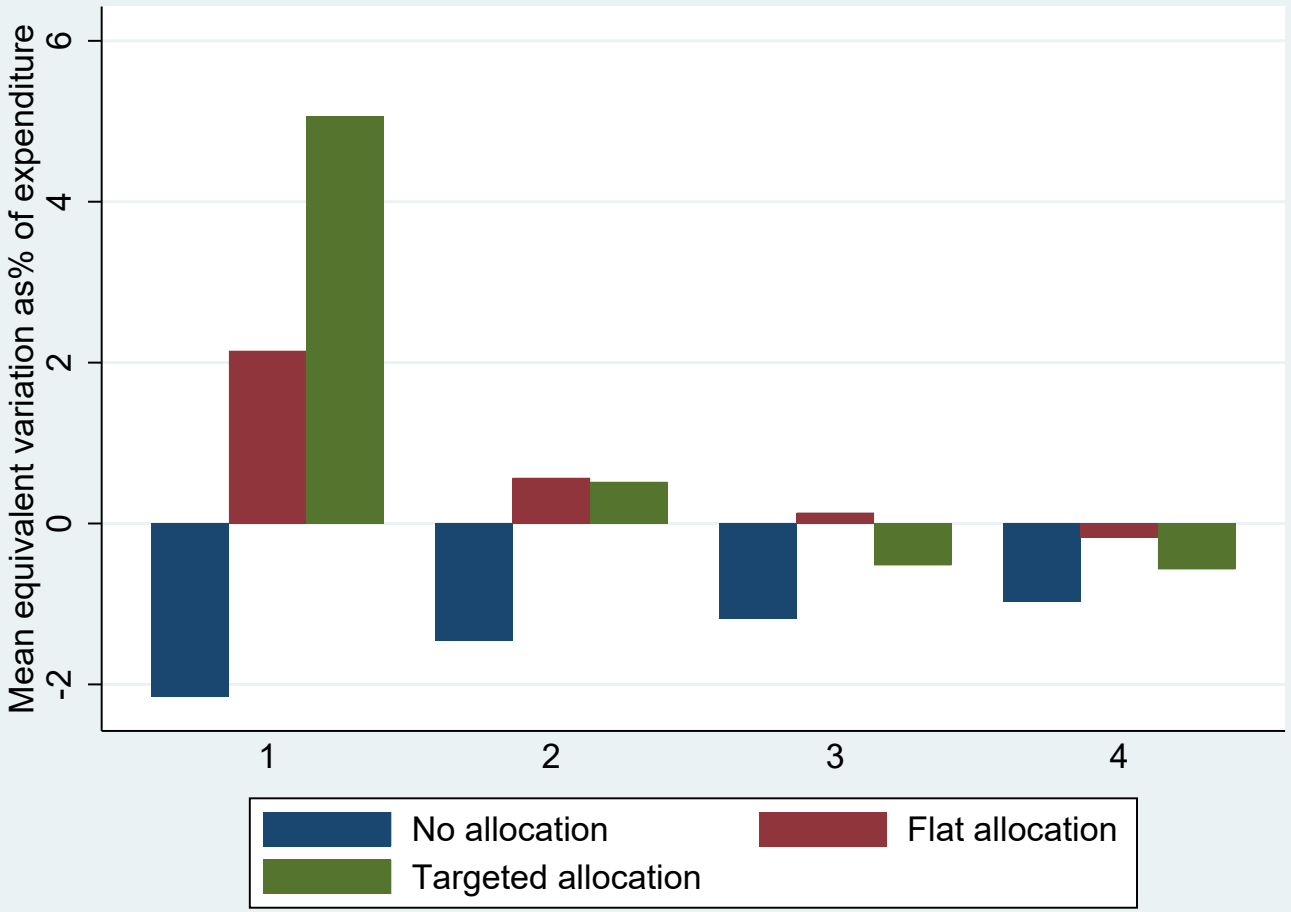
€100 carbon tax burden with no behavioural response:



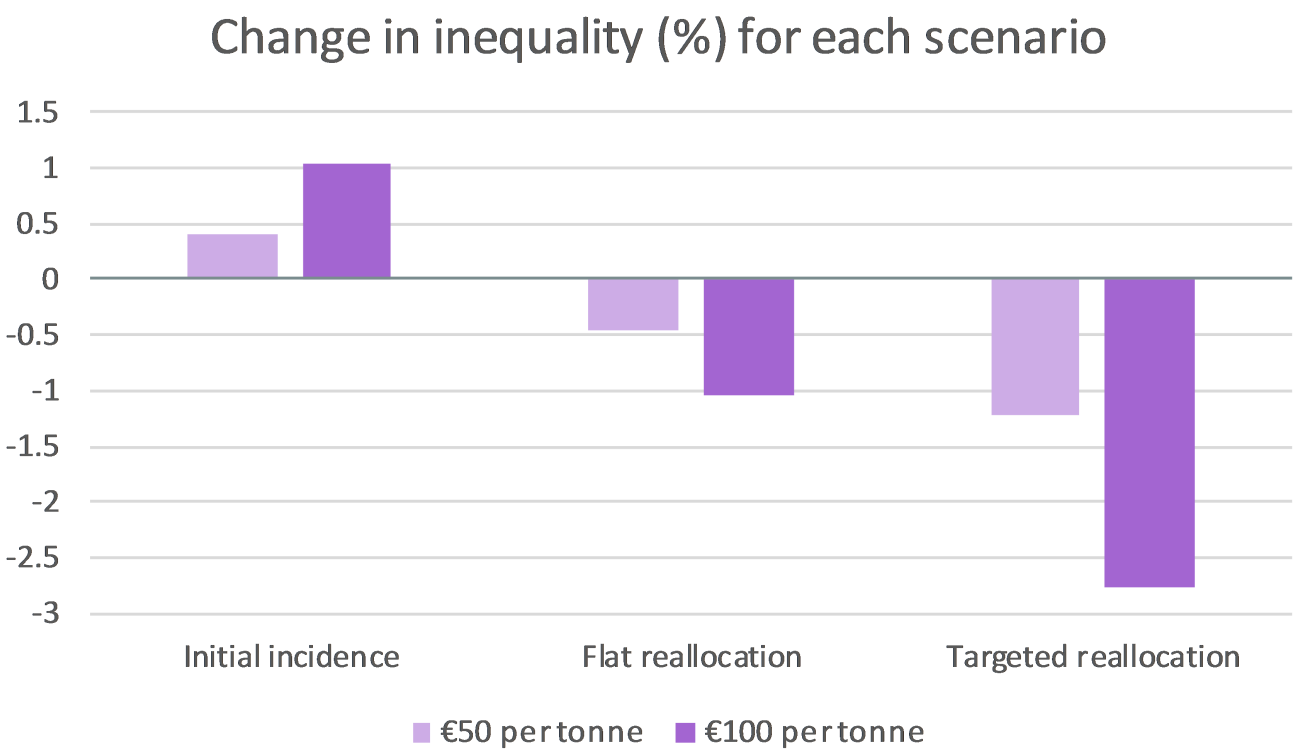
Urban vs. rural households



Flat and targeted allocation of a tax of 100 €/ton.



Changes in inequality with revenue recycling



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- Targeted allocation (via tax and welfare system) is better again
- Combining carbon taxation with appropriate revenue recycling can reduce **both** carbon emissions **and** income inequality
- Further work: more detailed analysis of how to do this in the context of the Irish taxation and welfare system

Findings from this research will be soon available in a ESRI-working and QEC paper