# *A Carbon Tax for Ireland:*
## *Effects of a $CO_2$ Tax and Recycling Options*

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## *Agenda*

- Introduction
- Data sources
- Household $CO_2$ emissions
- Distributional effects of a carbon tax
- Impact of tax recycling
- Indirect effect on households of a carbon tax
- Conclusions



## *Introduction*

- Assess effects of a hypothetical carbon tax on households with differing incomes, numbers of persons, locations, etc.
- Simulate effects of recycling revenue via social welfare benefits and tax credits or rates
- New work on indirect effect of carbon tax
- Based on ESRI WPs 246, 251 and a forthcoming paper in *Energy Policy*



## *Data sources*

- Household Budget Survey (HBS)
  - Household carbon usage and income
- SWITCH model
  - Effects on households of recycling tax revenues via different channels
- HERMES model
  - Macroeconomic effects of recycling
- Irish Sustainability (ISus) model
  - Household indirect carbon usage

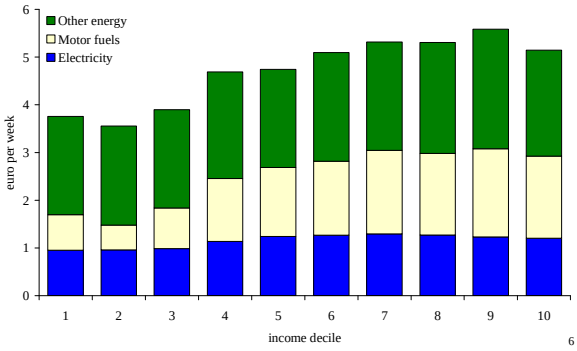


## *Household Budget Survey*

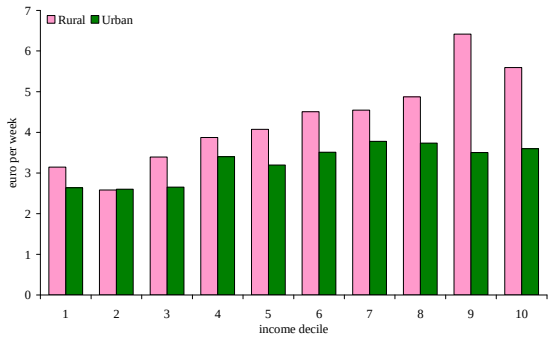
- Detailed survey of household expenditures, income and characteristics
- Questionnaires and expenditure diaries
- Conducted about every five years; most recently in 2005
- 6,884 respondents
- Anonymised microdata for 2005 wave released to researchers this year
- Includes data on fuel expenditures and quantities



*Weekly impact of a €20/t$CO_2$ tax by equivalised disposable income decile and fuel type*



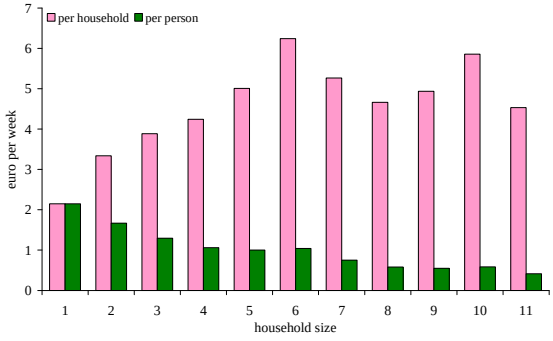
*Weekly impact of a €20/tCO$_2$ tax by equivalised disposable income decile and urban/rural location*




*Note: non-electric energy only*

7

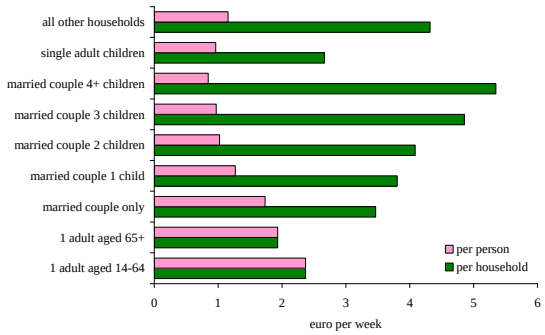
*Weekly impact of a €20/tCO$_2$ tax by number of persons in household*




*Note: non-electric energy only*

8

*Weekly impact of a €20/tCO$^2$ tax by equivalised disposable income decile and household structure*




*Note: non-electric energy only*

9

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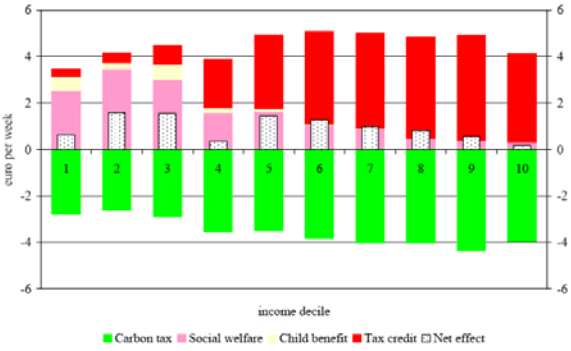
## *Tax recycling*

- *Stylised example to demonstrate practicability*
- *Social welfare increase: +€2 per week to pensions, unemployment compensation, short-term illness and disability benefits, one-parent families, QAA, 80c added to child benefit for welfare recipients*
- *Two income tax options tested:*
  - *Tax credits +€104 per year*
  - *Basic tax rate reduced from 20% to 19.5%*
- *35,000 households in bottom 3 deciles unaffected (55,000 in all)*

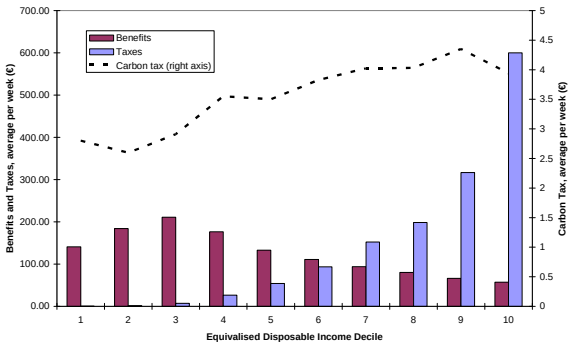
10

*Net effect on income distribution, by equivalised disposable income decile*



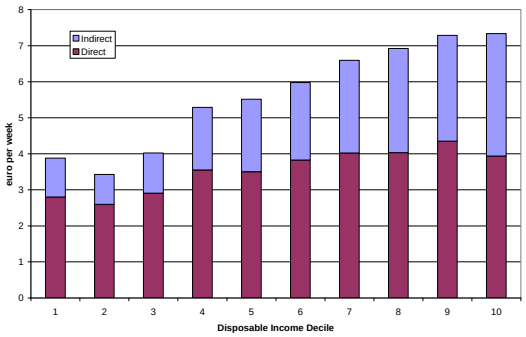

11

*Scale of carbon tax impact compared to total benefits and taxes*



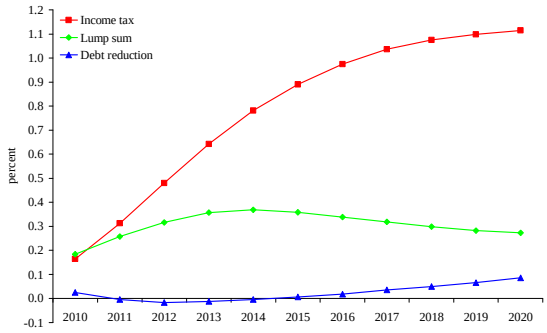

12

*Comparison of direct and indirect (via productive sector) effects on households of a €20/tCO$_2$ tax*




13

*Macroeconomic effects: change in GNP with a €20/tCO$_2$ revenue-neutral tax for three recycling options*




14

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## *Conclusions*

- A carbon tax would have a regressive effect in Ireland, but looks somewhat less regressive after indirect $CO_2$ emissions taken into account
- Most of this effect is amenable to compensation by increasing social welfare and tax credits
- Up to 55,000 households likely to require separate compensation, e.g. via student grants, capital programmes to improve household energy efficiency

15