Is carbon pricing always regressive?

Insights from a recursive-dynamic computable general equilibrium analysis with heterogenuous households for Austria.
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Research gap

Literature regarding distributional effects of environmental taxes focuses mostly on incidence through the ***consumption channel***. This raises the question about the relevance of effects at the ***income-side***. Consider the example of Jill and Joe:

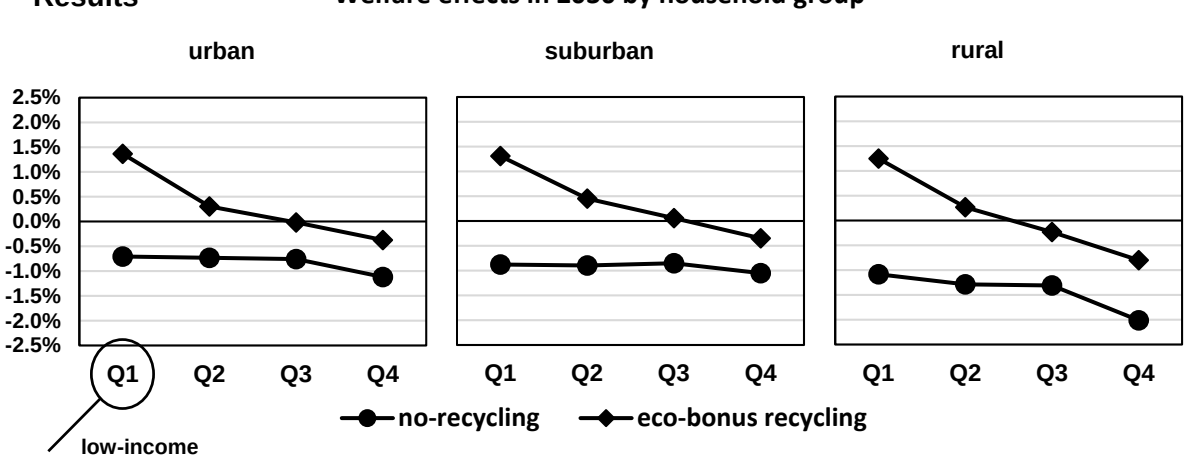
- **Jill loves imported Argentinian beef [-] and her diesel-fuelled jeep [-].**
- **Joe loves local vegan dishes [+] and riding his bicycle [+].**
- **Jill owns company shares of a renewable energy utility [+].**
- **Joe works as clerk for a company selling oil boilers [-].**

Introducing a carbon price, how are **Jill [±]** and **Joe [±]** affected?

Research question

We explore this issue for Austria assuming a national carbon price of ***130 EUR/tCO$_2$*** by the year 2030 for all production and consumption activities, which are not covered by the EU emission trading scheme and allocate the revenues of carbon pricing to the general public budget or use them as eco-bonus recycled per capita. Further variants of revenue recycling are presented in the paper.

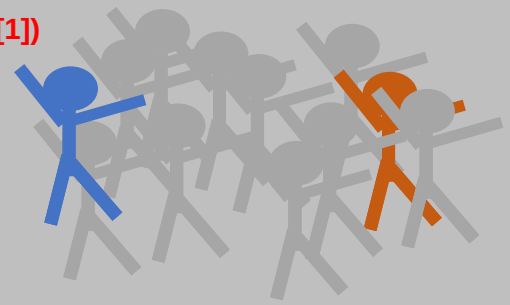
Results



We report the change in consumption possibilities (welfare) of private household groups after introducing carbon pricing. Impacts are *slightly progressive* in the no-recycling case i.e. low-income groups (Q1) are better off than high-income groups (Q4). Impacts are *strongly progressive* with eco-bonus recycling per capita, where Q1-Q3 impacts are even positive compared to no carbon pricing. Impacts for rural households are more pronounced.

Data We construct a data set comprising twelve Austrian groups of private households combining…

Income data (EU-SILC [1])
wages, salaries, interest, dividends, transfers, unemployment benefits, …



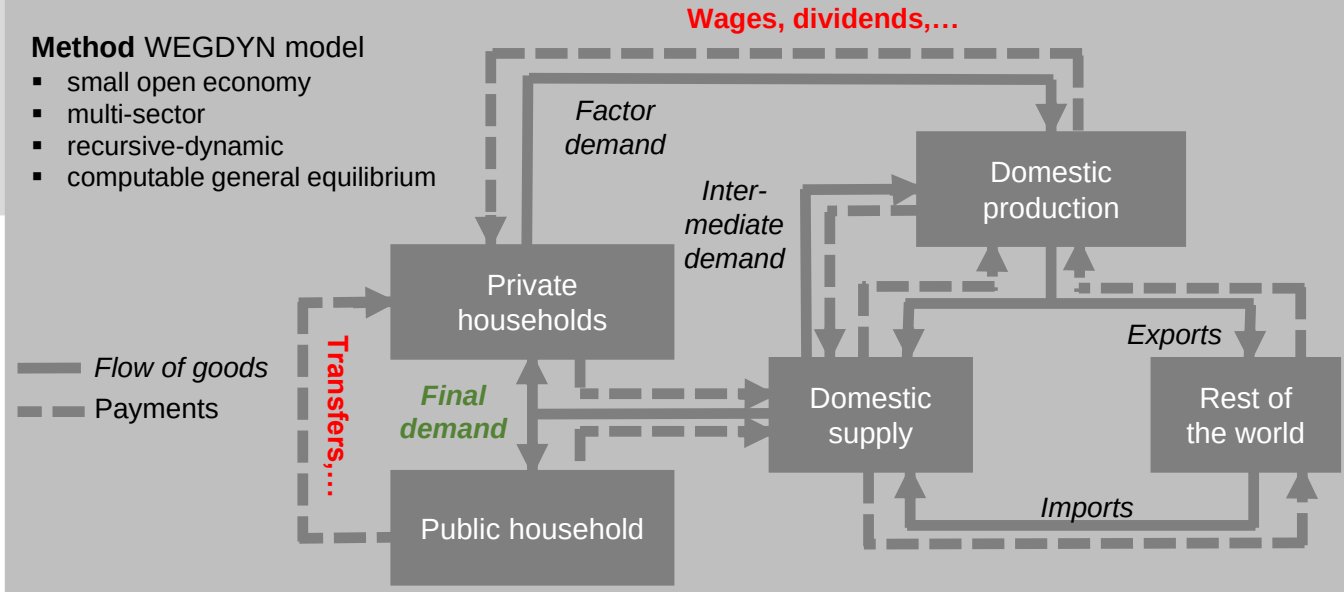
Consumption data (HBS [2])
food, mobility, rental expenses, insurance, clothing,…

Savings data (HFCS [3])

…and connect the household data with the social accounting matrix of the Austrian economy, which is extended by the Austrian CO_2 emissions inventory to capture all direct and indirect effects of introducing a national carbon price.

Method WEGDYN model

- small open economy
- multi-sector
- recursive-dynamic
- computable general equilibrium



[1] EU Survey on Income and Living Conditions (EU-SILC) 2014. Available at: www.statistik.at; [2] Household Budget Survey 2014/15. Available at: www.statistik.at;
[3] Fessler, P., Schürz, M. 2017. "Zur Verteilung der Sparquoten in Österreich," Monetary Policy & the Economy, Oesterreichische Nationalbank, issue 3, pages 13-33.

Conclusion Progressive impacts of carbon pricing are driven by difference in income structure of private households. We identify a gap between civil society perception of actual ('progressive') and communicated policy impacts ('regressive'). A stronger focus could be placed on urban-rural differences. Choosing a refunding scheme for the revenues of carbon pricing is a normative question. Carbon pricing alone is not sufficient for the required emission reductions set out in the Paris Agreement and needs complementary measures (standards, awareness raising, etc.).

Funding by ACRP (SHIFT, project number KR16AC0K13367) and FWF (Doctoral Programme Climate Change W1256) is thankfully acknowledged.

Paper is under review but available upon request. March 2021.