

Carbon taxes, distributional implications, and revenue recycling

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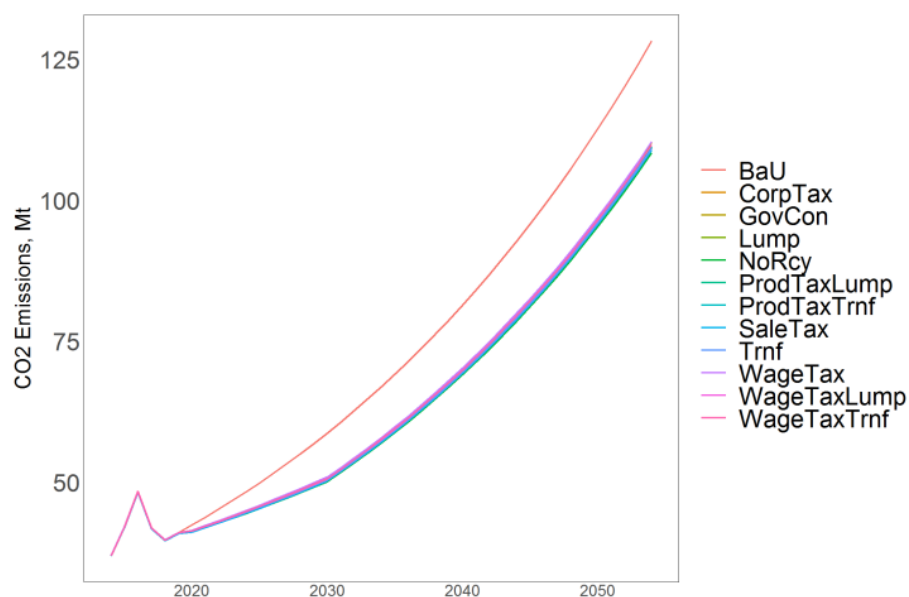
In 2019 the Department of Finance and the Department of Communications, Climate Action and Environment (DCCAE) in Ireland funded the Economic and Social Research Institute (ESRI), under the Joint Research Programme on Macroeconomy, Taxation and Banking to **model the distributional implications of carbon taxes and revenue recycling in Ireland** (de Bruin et al., 2019).

Note the analysis in this contribution is based on point-in-time estimates (in 2019), and annual increases in the Irish carbon tax trajectory, reaching €80 per tonne by 2030. It is important to note, however, that since 2020, the Government in Ireland has implemented legislation that provides for annual increases in the carbon tax of €7.50 per tonne (and €6.50 in the final year) in order to reach €100 per tonne by 2030, which will impact the estimates herein.

Modeling/analysis

The project, using the ESRI's I3E (Ireland, Environment, Energy and Economy) computable general equilibrium model, examined the environmental and economic impact of increasing the Irish carbon tax along a trajectory reaching €80 per tonne by 2030 using various revenue recycling schemes (de Bruin and Yakut, 2021).

Figure 1. Total Irish fuel combustion emissions with and without a carbon tax increase and various carbon tax revenue recycling schemes



Note: Figure 1 presents the total (ETS and non-ETS) economy-wide CO₂ emissions in the business-as-usual case and including a carbon tax increase with the various revenue recycling schemes. As can be seen in the figure, introducing a carbon tax increase will significantly decrease Ireland's emissions, by approximately 15% in 2030. Furthermore, the recycling scheme will have little impact on the level of emissions. In other words, no matter which of the revenue recycling schemes is applied, a similar emissions reduction will be achieved.

Source: de Bruin et al. (2019)

Key findings/policy implications

- The project's findings show a carbon tax increase of this magnitude alone will not be sufficient to reduce emissions to the levels needed to reach the EU emissions targets for 2020 and 2030.
- Although the increase in carbon tax decreases emissions by 15% in 2030 compared with no increase in carbon tax, the impacts of economic growth outweigh this, resulting in significant increases in emissions over time (see Figure 1).

- Although rural households emit less than urban households, a carbon tax increase will result in a larger reduction in emissions by rural households compared with urban households.
- From an economic perspective, an increase in the carbon tax will have limited impacts on GDP, especially if carbon tax revenues are used to reduce other distortionary taxes.
- Overall, the carbon tax will result in higher prices for Irish goods, decreasing both domestic and foreign demand for Irish goods.
- Rural households face higher price impacts than urban households. Impacts for rural households are regressive, where poorer households face the highest price increases. Middle-income urban households face the highest impacts.
- In reaction to price increases, households decrease consumption; again, the poorer rural households are impacted the most. Though consumption decreases, the real disposable income of households generally increases when revenues are recycled. Recycling revenues back to households through transfers particularly benefits poorer households, creating a progressive trend.
- Although recycling revenue through wage tax reduction results in the highest average increase in real income, the impacts are regressive.
- In conclusion, the project finds that an increase in the carbon tax as proposed by the recent All Government Climate Action Plan will reduce emissions but that alone will not ensure the EU targets are met. Furthermore, the economic impacts of an increased carbon tax are limited. Designing an appropriate carbon tax revenue recycling scheme can help the Government reduce the economic impacts of the carbon tax and/or decrease the inequality across households.
- It is also worth noting that, since the publication of the research by the ESRI in 2019, the Irish Government has implemented fiscal policy changes to ensure revenues raised from the carbon tax are “hypothecated” (ring-fenced). In line with “Programme for Government—Our Shared Future” commitments, carbon tax receipts raised on the first €20 per tonne of emissions annually contribute to general exchequer spending, corresponding to the rate of carbon tax in place prior to the annual increases commencing with Budget 2020 (Department of the Taoiseach, 2020). However, the additional revenue raised each year from the programmed rate increases, over and above the first €20 per tonne, is ring-fenced for specific climate action expenditure measures. This hypothecated revenue is allocated to programs such as energy efficient retrofits; addressing fuel poverty; providing for a just transition; and the promotion of sustainable agriculture practices (DPENDR, 2024).

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