

THE HETEROGENEOUS EFFECTS OF CARBON TAXATION IN IRELAND

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INTRODUCTION

Carbon taxation has emerged as a key component of Ireland's decarbonisation strategy. At present, carbon tax stands at €41 per tonne and is due to increase by €7.50 per year until it reaches €100 per tonne in 2030. It is well-known that carbon taxation is regressive, in that less affluent households pay a greater proportion of their income in carbon tax than their more affluent counterparts, but compensation of low-income households can ensure that carbon taxes are progressive rather than regressive. However, there are outstanding questions regarding the impacts of carbon taxation policy that this paper addresses.

We estimate the impacts of carbon taxation on different types of households across income bands and within the same income band. We identify the households with the largest burden under these two distributional views (e.g., households with children versus those without, or couples versus single people).

We also estimate energy demand responses to energy prices and quantify the distributional impacts of measures to compensate the most affected households for losses in disposable income after carbon taxes.

DATA AND ESTIMATION

This paper uses data collected by the Central Statistics Office (CSO) from Irish households called the Household Budget Survey (HBS). The HBS records expenditure on all goods by a sample of Irish households for a two-week period every five years. Thus, the HBS is a record of actual expenditure by real Irish households at a particular point in time. The HBS also records demographic data such as the number of people in the household and whether the household is in an urban or rural location. By examining the statistical relationship between household expenditure on energy (such as heating and lighting) and the price of

¹ This Bulletin summarizes the findings from: Tovar Reaños, M.A and Lynch, M.Á., "Measuring carbon tax incidence using a fully flexible demand system. Vertical and horizontal effects using Irish data", *Energy Policy*, Available online: <https://www.sciencedirect.com/science/article/pii/S0301421521005474?dgcid=author>

energy, we can estimate the impacts of increasing the cost of energy via carbon taxation.

Our results indicate that while energy demand for heating is relatively insensitive to price (i.e. inelastic), carbon taxation is an effective measure for reducing energy demand. However, we find that low-income households are less able to reduce energy demand than more affluent households. Previous ESRI research shows that low-income households in Ireland have lower levels of energy efficiency and therefore this could be a factor that decreases the demand response of these household types in the face of higher energy prices.

When comparing the tax burden across income levels, we find that the greatest cost is borne by single households over the age of 65 and couples without children in the lowest income group. However, we find within income levels that low-income households with dependent children are added to the groups with the high tax burdens. The results indicate that the cost of decarbonisation has very different impacts across households within this group. We show that while compensation policies can improve outcomes, one that targets less affluent households rather than one that distributes an equal allocation is more effective at reducing the regressive impact of carbon taxes on lower income households.

POLICY IMPLICATIONS

There are three key policy implications of this research. First, we demonstrate using Irish data that carbon taxation is indeed effective in reducing energy demand and emissions. This tallies with international evidence and with economic theory. The second policy insight is the importance of analysing distributional effects across and within income levels. This can guide the design for more equitable compensation mechanisms and social acceptance of carbon taxes. The final policy implication arises from the fact that there are inequalities in capabilities to reduce energy demand (i.e. inelastic demand). Consequently, it is important in the short run to use carbon tax revenues to boost the incomes of less affluent households rather than directing carbon tax revenues to encourage substitution away from carbon intensive activity.

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