THIRD-BEST CARBON TAXATION:

Trading off emission cuts, equity, and efficiency[*]

Frederick van der Ploeg[1], Armon Rezai[2], Miguel Tovar[3]

Abstract

We present a model of green tax reform: third-best carbon taxation that corrects an environmental externality and the revenue of which is used to maximise social welfare given constraints that an income tax needs to be levied but cannot be fully optimised. The model's Exact Affine Stone Index (EASI) demand system and labour supply and income tax schedules are estimated from German consumption expenditure data, allowing for heterogeneity across households. We combine this with a model of households' and firms' carbon emissions to obtain a micro-based simulation model. The government sets a carbon tax to correct damages from emissions and chooses to rebate the revenue lump-sum or by adjusting existing income taxes. Pricing carbon cuts emissions and rebating its revenue fully as lump-sum climate dividends improves equity but is costly since the negative effects of carbon taxation on the real consumer wage and labour supply cannot be mitigated. Using tax revenue to fund income tax reform improves efficiency. We find that the government sets the "third-best" carbon tax above the Pigouvian level at our preferred value of public inequality aversion and that it distributes carbon tax revenue fully as dividends irrespective of inequality aversion. The carbon tax, climate dividends, and the progressivity of the income tax rise with inequality aversion. We decompose the welfare effects of policy into emissions, equity, and efficiency components for different degrees of inequality aversion and climate damages.

Keywords: EASI demand system, recycling carbon tax revenue, inequality aversion, efficiency, equity, third-best carbon tax

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[1] Department of Economics, University of Oxford, Oxford OX1 3UQ, United Kingdom; email: rick.vanderploeg@economics.ox.ac.uk. Also affiliated with University of Amsterdam, The Netherlands, CESifo and CEPR.

[2] Department of Socio-Economics, Vienna University of Economics and Business, Welthandelsplatz 1.D5, 1020 Vienna, Austria; email: armon.rezai@wu.ac.at. Also affiliated with International Institute for Applied System Analysis, IIASA, 2361 Laxenburg, Austria, CESifo, and CEPR.

[3] The Economics and Social Research Institute, Whitaker Square, Sir John Rogerson's Quay, Dublin 2, Ireland; email: miguel.angeltovar@esri.ie. Also affiliated with Trinity College Dublin, Dublin, Ireland.