

Consumption vs. Production Based CO2 Pricing Policies: Macroeconomic Trade-Offs and Carbon Leakage

Topic: Energy Systems

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This paper compares the traditional environmental tax reform for CO₂ emissions with a taxation scheme that taxes CO₂ emissions embodied in consumption instead of domestic production in the framework of a unilateral policy of the EU27. The embodied emissions are taxed independently of their origin. The CO₂ tax rates applied are identical and revenues of the new CO₂ tax are in both cases recycled via lower social security contributions of employers as well as of employees. The analysis is done with a DYNK (Dynamic New Keynesian) model covering 59 industries and five groups of household income for the EU27. The domestically (within the EU 27) embodied CO₂ emissions are calculated by unitary shocks for each commodity in the DYNK model. The emissions embodied in imports from Non-EU 27 as well as the resulting carbon leakage from an EU 27 perspective are calculated using a simple MRIO (Multi-Regional Input-Output) model. The results show the different macroeconomic results, driven by the different impact of the taxation schemes on price competitiveness of EU 27 firms. These differences in trade effects also drive the differences in leakage and show considerable negative leakage effects in the case of taxing embodied CO₂ emissions. Both taxation schemes are also regressive for household incomes, but in a very different magnitude.