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Abstract

This article studies climate policies and trade policies focusing on their interactions. It presents an applied general equilibrium model which combines the theoretical foundations of an Eaton-Kortum (EK) model of international trade with the comprehensiveness of a global multi-region, multi-sector Computable General Equilibrium (CGE) model of production and consumption. The EK model features endogenous Ricardian productivity gains and non-tariff trade costs. Countries and sectors can be disaggregated, e.g. representing federal states and technology-specific power generation. The model calibration introduces a log-multiplicative structural estimation approach based on a gravity model with market clearing conditions to simultaneously estimate the EK model's trade elasticity, productivities and iceberg trade costs at the subnational sectoral level. Based on these estimates, policy simulations are carried out, in which the effect of climate and trade policy on CO_2 emissions is decomposed into a scale, composition, technique and substitution effect. The policy simulations suggest that the removal of tariffs creates smaller welfare gains than a comparable reduction of non-tariff barriers but also a slightly smaller increase in European and global CO_2 emissions, mainly via substitution and composition effects. The effects significantly differ between national and subnational model regions. Lower trade costs reduce the negative welfare effects of the European Emissions Trading System (EU ETS) for some of its members by lowering emissions. EU renewable energy support slightly reduces European and global emissions but also welfare compared to the EU ETS alone.

JEL Classifications: C68; F10; F18; Q40

Keywords: international trade; regional model; climate policy; renewable energy; TTIP; CETA; CGE

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