

Niels Anger

EMISSION TRADING BEYOND EUROPE: LINKING SCHEMES IN A POST-KYOTO WORLD

Centre for European Economic Research (ZEW), P.O. Box 103443, 68034 Mannheim, Germany.
Tel: +49 621 1235 206, Fax: +49 621 1235 226, e-mail: anger@zew.de

Overview

Linkage of the EU Greenhouse Gas Emission Trading Scheme (ETS) to emerging schemes beyond Europe is a central strategic issue of current EU climate policy. At present, non-European countries like Canada, Japan or Australia are contemplating the set up of domestic ETS with the intention of linking up to the European scheme – which would enable companies outside the EU to trade emissions with European firms. From 2008 on, company trading among linked schemes would however overlap with trading among countries, as the Kyoto Protocol facilitates international government trading of greenhouse gas emissions at the country level. Moreover, both companies and governments may undertake project-based emission reductions in developing countries via the Clean Development Mechanism (CDM). The present paper assesses the economic impacts of linking the EU ETS internationally in the presence of a post-Kyoto agreement in 2020. In a quantitative approach it (i) addresses the economic impacts of company-based emission trading beyond the European ETS by linking to emerging non-EU schemes, (ii) analyzes the efficiency implications of linking in the presence of parallel country-level trading under a post-Kyoto regime, and (iii) introduces a possible joint future trading system between ETS companies and Kyoto governments.

Methods

To assess the magnitude of economic impacts caused by overlapping trading regimes and the CDM, a numerical multi-country equilibrium model of the world carbon market is employed. Empirical data on baseline emissions and emission allocation is implemented into the numerical framework. In order to account for real-world complexities, the model incorporates marginal abatement cost functions calibrated to energy-system data and considers transaction costs and investment risk for CDM host countries. Moreover, it explicitly divides the regional economies into energy-intensive sectors and remaining industries. The model features separated carbon markets for ETS and Kyoto trading, incorporates CDM host countries as well as CDM access restrictions, and is calibrated to represent the future carbon market in the year 2020.

Results

The simulations show that linking the European ETS induces only marginal economic benefits: As where-flexibility of international emission trading is restricted to energy-intensive industries that are assigned generous initial emissions, the major compliance burden is carried by non-trading industries excluded from the linked ETS. In the presence of parallel government trading under a post-Kyoto Protocol, the excluded sectors can however be substantially compensated by international trading activities, thus increasing the political attractiveness of the linking process. However, emission markets are still segmented as international trading is feasible only among the same sectors of the linked economies. From an efficiency perspective, a desirable future climate policy regime represents a joint trading system that enables international emission trading between ETS companies and governments, establishing full where-flexibility. While the CDM is not able

to alleviate the inefficiencies of linked ETS, in a parallel or joint trading regime government access to low-cost abatement options of developing countries induces large additional cost savings. The restriction of CDM access via a complementarity criterion does not significantly decrease the economic benefits from project-based emission crediting.

Conclusions

This paper lays out the efficiency implications of internationally linked emission trading schemes, as well as alternative country-level compensation mechanisms for the current inefficiencies of schemes. In the long run however, uncertainties about future post-Kyoto agreements and the exhaustion of low-cost abatement options of developing countries raise concerns about the availability of such mechanisms. Moreover, given the large number of participants, it is company-based trading that provides a fertile ground for developing a competitive market for emissions. Considering the potential for efficiency improvements of future emission trading schemes – such as stricter emission allocation to covered installations or enlarged sectoral scope – linking ETS beyond Europe may become not only a fall-back option for a lacking international agreement, but a vital option of future climate policy on a global level