



Workshop on the role of carbon markets in reaching carbon neutrality

17 - 21 June 2023

16:00-17:30 | Session 5: Beyond the EU ETS: Offsets & China ETS Policy Overlap

Presenter: Carolyn Fischer (World Bank)

Title: Interactions between emissions trading systems and other policies: insights from theory and an application to China

Abstract: Jurisdictions that rely on emissions trading to control emissions often utilize other environmental or energy policies as well, including policies to support renewable energy and improve energy efficiency. Overlapping policies produce economic interactions that can lead to quite different outcomes from what one might predict after examining the individual policies separately. Prior literature has focused on how overlapping policies might affect outcomes under cap-and-trade (CAT) systems, where aggregate emissions are fixed by regulation but emissions prices respond. However, jurisdictions are increasingly turning to alternative forms of emissions markets, including a range of rate-based emissions trading systems, in which both emissions quantities and prices are flexible and the significance of policy interactions is less understood. This paper extends the literature by considering the implications of overlaps for a range of ETSs, including not only CAT but also several forms of tradable performance standards (TPSs). We consider a variety of overlapping policies, including subsidies to renewables and taxes on electricity. We present analytical results that reveal how outcomes differ, depending on the type of the ETS and the given overlaps. We then describe and apply a numerical general equilibrium model that offers quantitative results in the context of China. Our analytical model finds that an overlapping subsidy to renewable energy—which has no effect on emissions under a CAT system—increases emissions when the ETS is a uniform, sector-wide TPS, and decreases emissions when the ETS is a TPS that covers only emissions-intensive sources, excluding clean ones from participating in credit trading. With CAT, adding an overlapping renewables subsidy or electricity consumption tax has efficiency costs. Under certain TPSs, however, these measures can reduce distortions and enhance cost-effectiveness. Our numerical model offers quantitative assessments of the impacts of overlaps on emissions, production, prices, and costs, under China's planned ETS and alternative designs. China's current policy overlaps reduce the cost difference between its differentiated TPS and CAT by two-thirds, although CAT without overlapping policies would be most cost-effective. Indirect emissions pricing improves price pass-through in rate-based systems. Using tradable portfolio standards to meet renewables targets helps offset the distortions from differentiated benchmarks, especially those excluding renewables, and also implicitly taxes electricity. Furthermore, it does so in a self-adjusting manner, so as not to over-correct when the ETS design gives adequate incentives for clean producers. Our findings highlight the need to consider the choice of ETS and overlapping policies together when undertaking reforms.



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