

Summary on: “Linking Emission Trading Schemes”

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There are now a number of different emissions trading schemes in operation around the world and many more under proposal. Linking these schemes together would make economic sense, since larger markets mean more buyers with access to more low-cost abatement opportunities in different geographical locations. It would also be good news for companies threatened by the high compliance costs of multiple emissions trading schemes. However, existing schemes are highly diverse in terms of scope, size, and structure, which could present a significant barrier to linkage.

As in any market, permit price in an emissions trading scheme is determined by the dynamics of supply and demand. In this case supply corresponds to the cap, or total number of permits issued by the regulator, while demand depends on emission volumes and abatement costs. The regulator's choice of how many permits to issue, based on estimates of past and future emissions volumes, influences the price of traded permits by determining supply. But pollution volumes are highly dependent on general economic conditions and are, therefore, quite unpredictable, so demand within any one scheme is difficult to forecast accurately. In addition, different schemes vary in terms of design and scope, so the price of permits can vary greatly across schemes.

Linking two schemes together creates a potentially larger system in which permits from both original schemes are valid for compliance purposes. Since permits from the different schemes will now be fungible, they must have the same price. In other words, the prices of permits in the two original schemes must converge to a single price from their original levels which, for the reasons above, are likely to be different. Whether and how this takes place will depend on the characteristics of the schemes in question, and the way that they are linked.

The linkage between two schemes may be either unilateral, where permits can be transferred in only one direction, or bilateral, where permits may flow in either direction. In the case

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of unilateral linkage, if the permitted direction of transfer is from the higher-price scheme to the lower-price scheme, Grull and Taschini (2010) show that then no transfer will take place: buyers in the second scheme already have access to low-priced credits, and these are not valid in the higher-price system. But if transfer is permitted from the lower-price to the higher-price market, credits will flow from low to high price regimes, as buyers in the higher-price scheme take advantage of the new supply of cheap credits. This flow could potentially continue until all the credits in the lower-price market have been used up. However, the transfer of credits represents a decrease in supply in one scheme and an increase in the other, leading to a corresponding increase in price in the lower-price scheme and a decrease in price in the higher-price scheme. In other words, convergence dynamics will emerge and the difference between the two prices will start to decrease until either the prices reach the same level, or until all the credits have passed from one scheme to the other.

Since regulators will generally want to induce a minimum domestic abatement action, controls will usually be put in place to restrict the volume of permits that may be transferred between schemes. In this case, a difference in price between the two schemes will cause prices to move towards each other until the point where the maximum allowable number of permits has been transferred. If this occurs before the two prices converge, the result will be two differently-priced schemes with no flow of permits between them: arguably not very different from the original situation, except that in a bilateral linkage the flow could resume in the opposite direction if market conditions change. To prevent this situation and fully favour the depletion of low-cost abatement opportunities, regulators could opt for a linkage with no restrictions on the maximum level of transfer. But even with no limits on volume, the permit price in the lower-price scheme cannot exceed a theoretical maximum which occurs when no more permits are left in this scheme. Assuming that the payment of a penalty is an alternative to compliance, such a maximum corresponds to the cost of the penalty. It is possible to show that, even with no restrictions on the volume of permits transferred, if the penalty structures do not respect specific conditions then the permit prices in two linked schemes might still not converge to a single level. Price convergence, and hence effective linkage, can therefore never be guaranteed.

References

Grull, G. and Taschini, L. (2010). Linking Emission Trading Schemes. The Grantham Research Institute on Climate Change and the Environment, London School of Economics. *Preprint*.

Complete paper: Here the link to the working paper version on SSRN

Short bio: Luca Taschini is an economist, working mostly on the theory of market-based mechanisms, energy economics and technology change under uncertainty. His current research aims to understand both theoretically and practically the functioning and design of

transferable permits systems, including questions of price containment mechanisms, participation restrictions, the linkage of markets, and the investigation of budget-compatible policies able to promote technology change. Since June 2009, Luca is a researcher at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science, UK.